IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

This PHOTOFACT Folder Set is

WIRE-SEALED FOR YOUR PROTECTION

to guarantee completeness of contents

DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

TO OPEN ***JUST DO THIS:***

1

Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top, firmly.

2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.

3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.

4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

The PHOTOFACT® Servicer

SET 500 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ SEPT. 1960

CONTENTS PHOTOFACT SET 500

TRADE NAME AND MODEL	SET AND FOLDER NO.
TELEVISION RECEIVERS	
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SYLVANIA	
17B110, 17M101, 17P11 Series (Ch. 547-1, 547-2)	500-2
PRODUCTION CHANGE BULLETIN 244	
PHILCO Tel. Rec.	
H3046AQ, GL, GT, H3047GC, TC, WC, H3055BL, L, WL, UH3046AQ, GL, GT, UH3047GT, TC, WC, UH3052BL, L, WL (Ch. 10H25, R, U)	500-3
PHILCO Tel. Rec.	
H4807L, M, W, UH4807L, M, W (Ch. 10N41, U)	500-3
PHILCO Tel. Rec.	
Chassis 10L31, U, 10L32, U	500-3
RCA VICTOR Phono	
VP-34HJ, JK, VP-36 (Ch. RS-34P, RS-182A)	500-3
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ADMIRAL	
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C1168C, M, W	500-5
COLUMBIA	
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TR-800	500-7
EMERSON	
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TC-47	500-12
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AF-15	500-14
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7P12E, T, 2800, 2808, 2809, 2901 (Ch. 1-638-1, 1-638-2, 1-638-3)	500-17
TRAV-LER	
1008	500-18
ZENITH	
Royal 710L (Ch. 7CT43Z1)	500-19

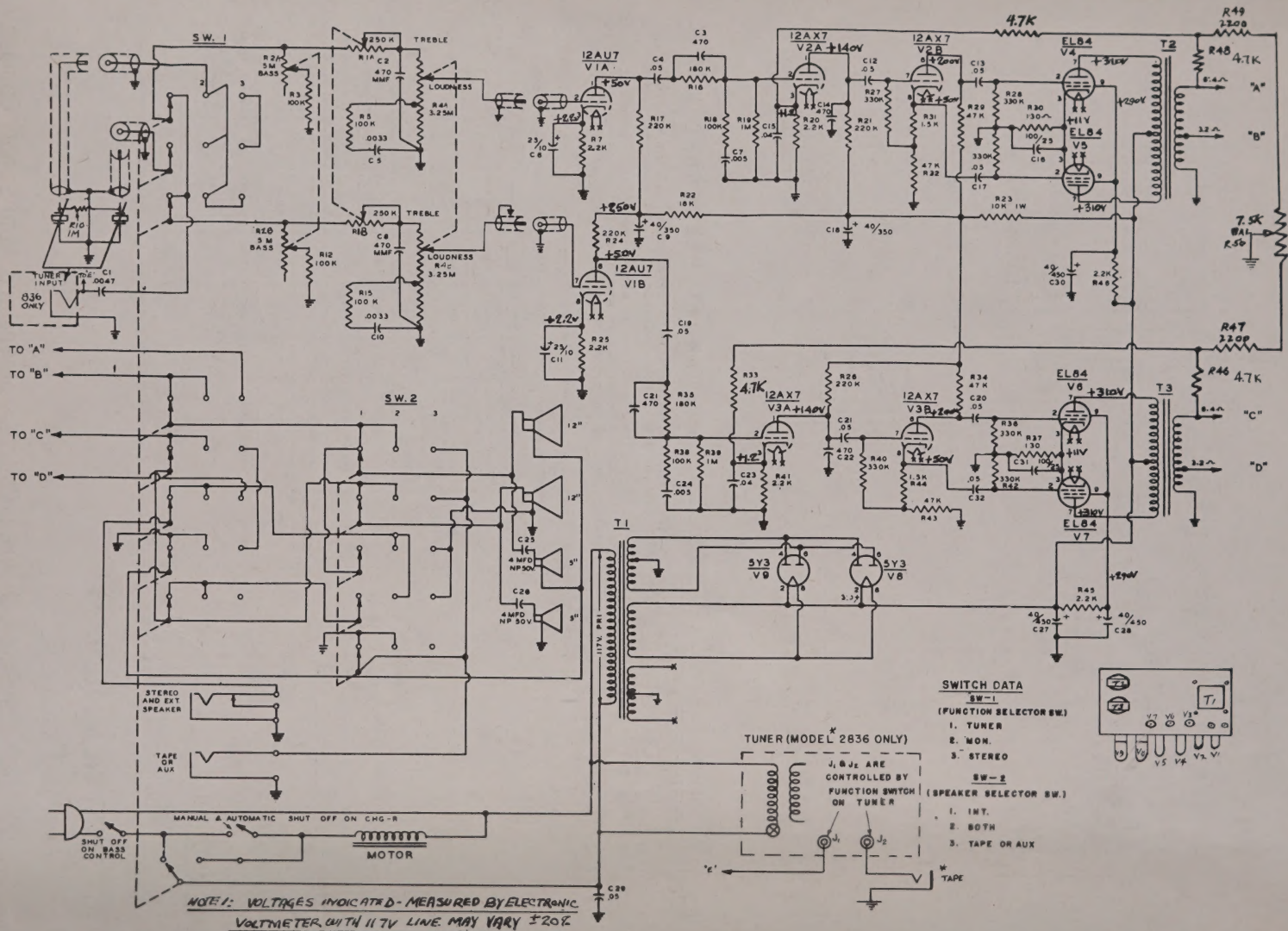
This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

IN THIS ISSUE OF THE SERVICER:

Capitol Models
836, 2836

Raytheon Models
8TP1, 8TP2, 8TP3, 8TP4 (CH. 7RT1)

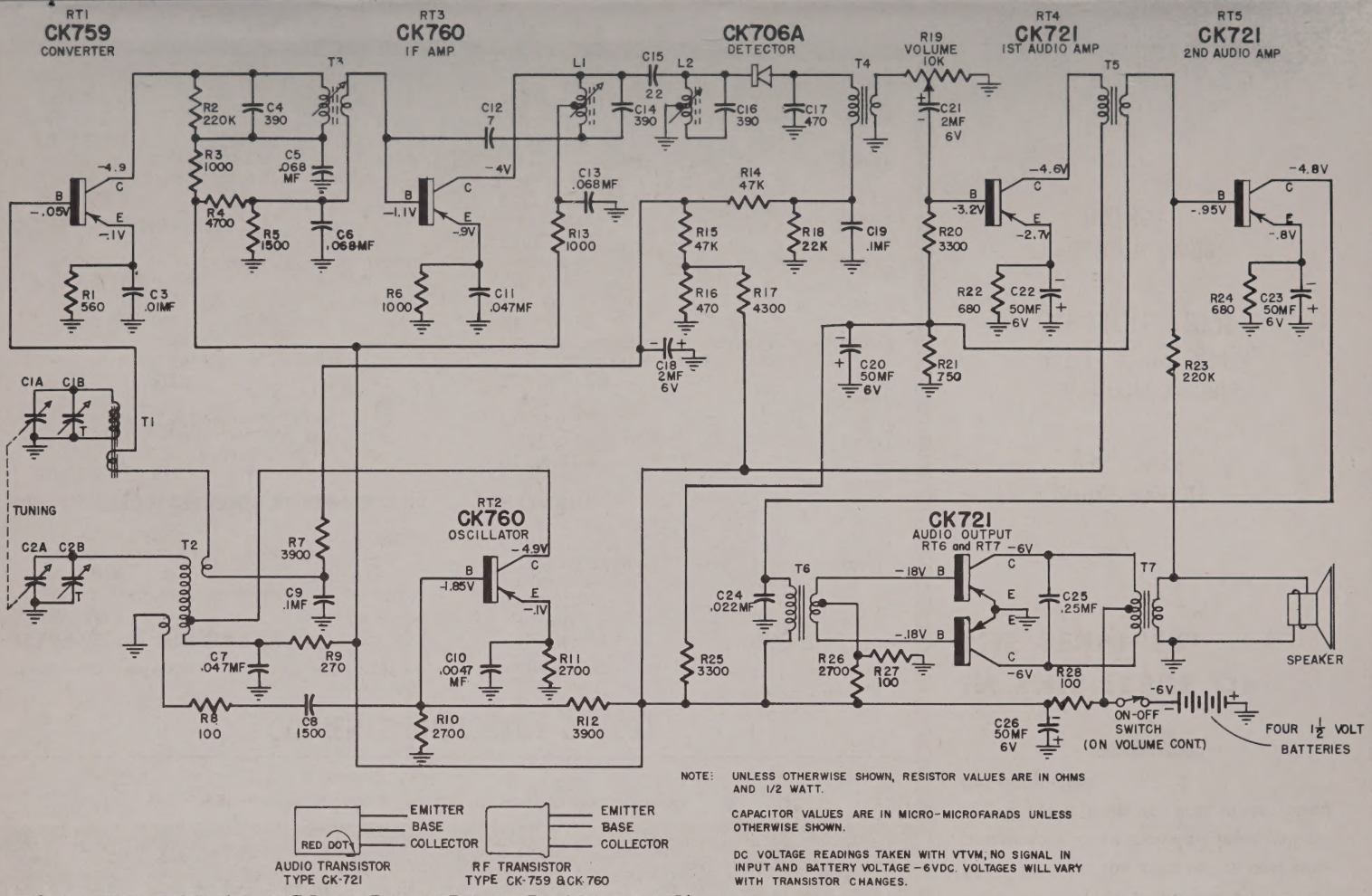
Truetone Model
D2785



NOTE 1: VOLTAGES INDICATED - MEASURED BY ELECTRONIC VOLTMETER WITH 117V LINE. MAY VARY ±20%

CAPITOL MODELS 836, 2836

Schematic Diagram Courtesy of Capitol Records, Inc.



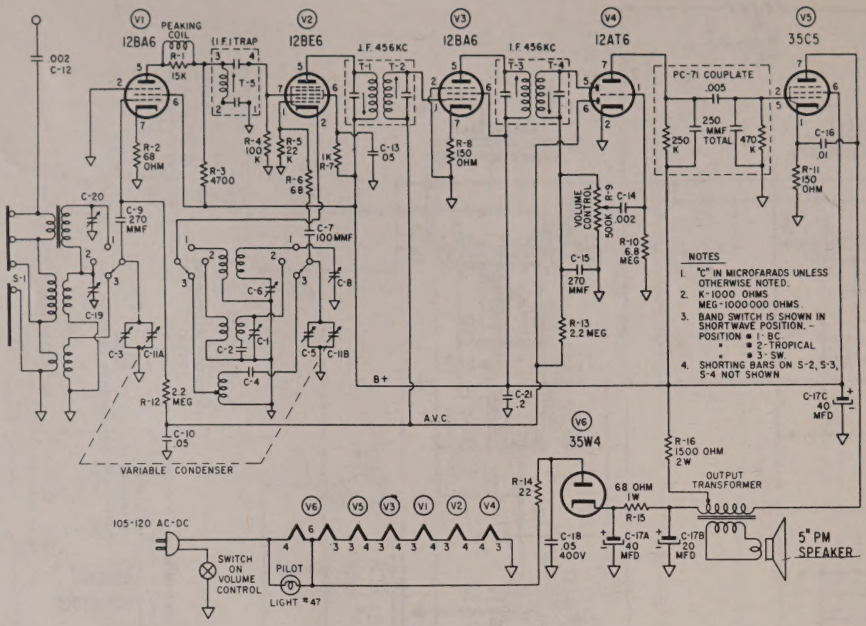
NOTE: UNLESS OTHERWISE SHOWN, RESISTOR VALUES ARE IN OHMS AND 1/2 WATT.

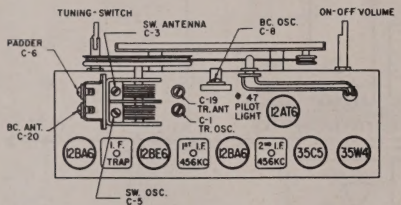
CAPACITOR VALUES ARE IN MICRO-MICROFARADS UNLESS OTHERWISE SHOWN.

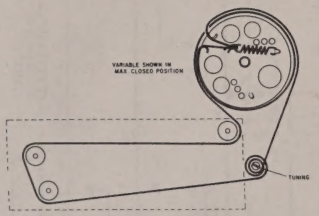
DC VOLTAGE READINGS TAKEN WITH VTVM; NO SIGNAL IN INPUT AND BATTERY VOLTAGE -6VDC. VOLTAGES WILL VARY WITH TRANSISTOR CHANGES.

RAYTHEON MODELS 8TP1, 8TP2, 8TP3, 8TP4 (CH. 7RT1)

Schematic Diagram Courtesy of Raytheon Manufacturing Company







ALIGNMENT PROCEDURE

Use isolation transformer if available. If not connect a .1 MFD. cap. in series with low side of signal generator and B-

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

TUNING RANGE: BROADCAST 540–1650 kc . . . . TROPICAL BAND 2.2–7.5 MC. . . . SHORTWAVE BAND 7.3–24 MC.

Dummy Antenna	Signal Generator Coupling	Band Switch Position	Signal Gen. Frequency	Radio Dial Setting	Output Meter	Adjust	Remarks
.1 MFD	RF SECTION OF VARIABLE CONDENSER	BC	455KC	1650KC	ACROSS VOICE COIL	T1 T2 T3 T4	ADJUST FOR MAXIMUM
.1 MFD	RF SECTION OF VARIABLE CONDENSER	BC	455KC	1650KC	ACROSS VOICE COIL	I.F. TRAP	ADJUST FOR MINIMUM
400	ANTENNA LEAD	SW EXTREME LEFT	24MC	24MC	ACROSS VOICE COIL	C5●	ADJUST FOR MAXIMUM
400	ANTENNA LEAD	SW	20MC	20MC	ACROSS VOICE COIL	C3●♦	ROCK GANG & ADJUST FOR MAXIMUM OUTPUT
400	ANTENNA LEAD	TROPICAL	7.5MC	7.5MC	ACROSS VOICE COIL	C-1●	ADJUST FOR MAXIMUM
400	ANTENNA LEAD	TROPICAL	6MC	6MC	ACROSS VOICE COIL	C-19●*	ROCK GANG & ADJUST FOR MAXIMUM OUTPUT
100 MMFD	ANTENNA LEAD	BC	1650KC	1650KC	ACROSS VOICE COIL	C8	ADJUST FOR MAXIMUM
100 MMFD	ANTENNA LEAD	BC	1500KC	1500KC	ACROSS VOICE COIL	C20	ADJUST FOR MAXIMUM
100 MMFD	ANTENNA LEAD	BC	600KC	600KC	ACROSS VOICE COIL	C6	ROCK GANG & ADJUST FOR MAXIMUM OUTPUT RECHECK C4 & C3 ADJUSTMENTS AS GIVEN

● IF TWO PEAKS CAN BE OBTAINED, USE ONE WITH TRIMMER SCREW FURTHEST IN.
♦ IMAGE FREQUENCY SHOULD APPEAR AT 20.9MC AND BE CONSIDERABLY WEAKER.
* IMAGE FREQUENCY SHOULD APPEAR AT 6.9 AND CONSIDERABLY WEAKER.

TRUETONE MODEL D2785

Schematic Diagram Courtesy of Western Auto Supply Company

PHOTOFACT® Folder

HOFFMAN CHASSIS
354, 307002, 307003

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

HOFFMAN CHASSIS
354, 307002, 307003

HOFFMAN CHASSIS
354, 307002, 307003

MODEL MR3653 (CH. 354)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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MODEL MR3653 (CH. 354)

TRADE NAME	HOFFMAN MODELS	TV CHASSIS	Remote Control RECEIVER	Remote Control TRANSMITTER
	BR3653, BR3663, BR3673, BR3683	354	307003	307002
	MR3653, MR3663, MR3673, MR3683	354	307003	307002
	SPR3653, SPR3663, SPR3673, SPR3683	354	307003	307002
	WR3653, WR3663, WR3673, WR3683	354	307003	307002

MANUFACTURER	Hoffman Electronics Corp., Consumer Products Div., 6200 S. Avalon Blvd., Los Angeles 3, Calif.
TYPE SET	Television Receiver (With Remote Control)
TUBES	TV: VHF - Eighteen Remote Control Receiver: Three
TRANSISTOR	Remote Control Transmitter: One
POWER SUPPLY	110-120 Volts AC, 60 Cycle
RATING	250 Watts, 2.4 Amp. @ 117 Volts AC (With Remote Control, While Tuning)
	225 Watts, 2.2 Amp. @ 117 Volts AC (With Remote Control, Not Tuning)
	230 Watts, 2.2 Amp. @ 117 Volts AC (Less Remote Control, While Tuning)
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

The safety glass is an integral part of the picture tube.

FUSE

Remote Control Receiver: A fuse wire is used for filament protection. (For location, see M5 in photo "Chassis - Bottom View".)

FUSE DEVICE

TV: A Circuit Breaker is used for low voltage power supply protection. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, remove left half of escutcheon plate, channel seeking switch, and fine tuning knob.

AGC

The AGC may be varied by means of an AGC control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by means of a Focus control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive control. (For location, see "Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Ratio Detector secondary (A9) located top of chassis.

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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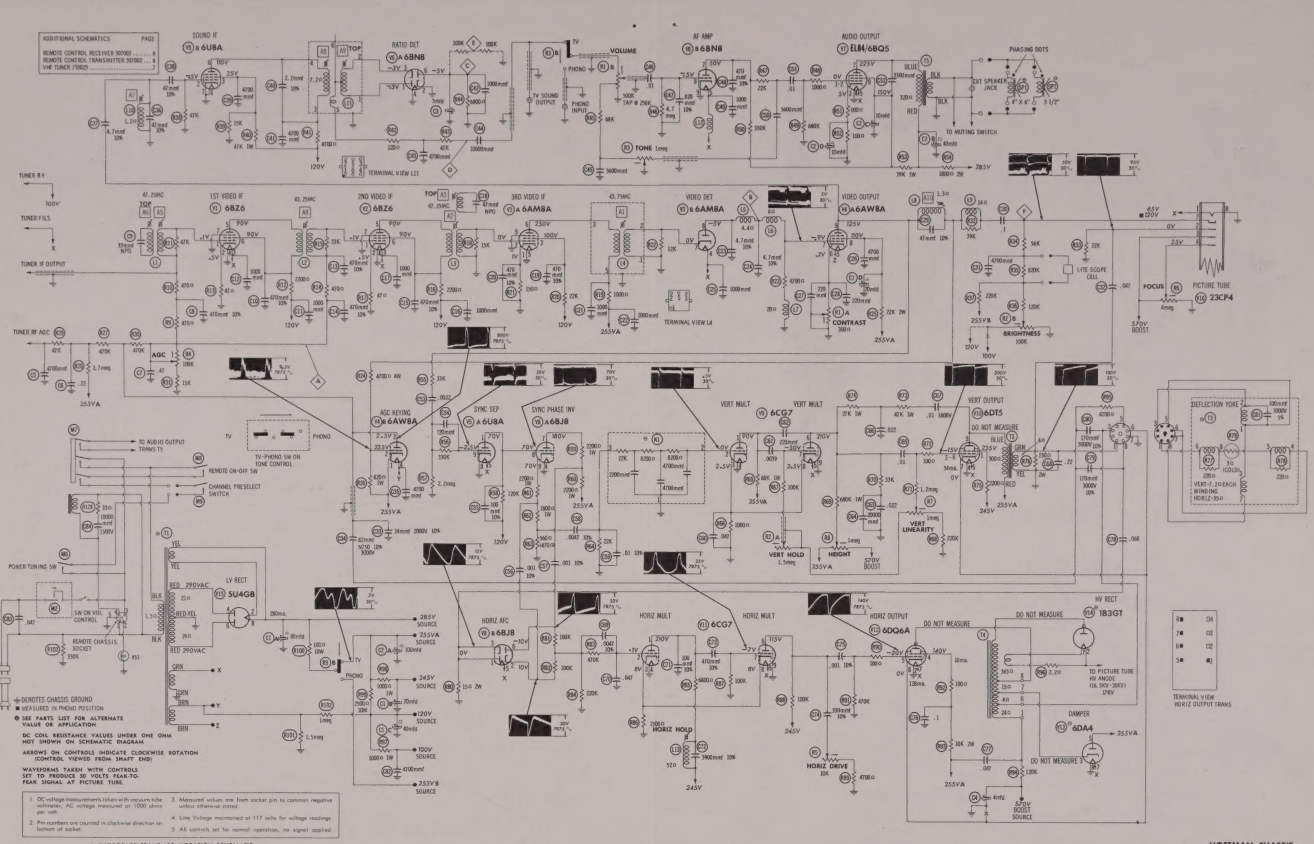
SET 500 FOLDER 1

HOFFMAN CHASSIS
354, 307002, 307003

HOFFMAN CHASSIS
354, 307002, 307003

SET 500 FOLDER 1


ADDITIONAL SCHEMATICS PAGE
REMOTE CONTROL RECEIVER 307003 5
REMOTE CONTROL TRANSMITTER 307002 ... 5
VHF TUNER 770020 7
SOUND IF
V1 6U8A
RATIO DET
V2 6BN8
AF AMP
V3 6BN8
VOLUME
TONE
AUDIO OUTPUT
V7 ELM/6BQ5
PHASING BOTS
EXT SPEAKER JACK
TO MUTING SWITCH
TUNER B+
TUNER FILS
TUNER IF OUTPUT
1ST VIDEO IF
V5 6BZ6
2ND VIDEO IF
V6 6BZ6
3RD VIDEO IF
V4 6AM8A
VIDEO DET
V3 6AM8A
VIDEO OUTPUT
V4 6AW8A
LITE SCOPE CELL
FOCUS
PICTURE TUBE
V16 23CP4
CONTRAST
BRIGHTNESS
TUNER IF AGC
AGC
AGC KEYING
V9 6AW8A
SYNC SEP
V1 6U8A
SYNC PHASE INV
V8 6BJ8
VERT MULT
V5 6CG7
VERT MULT
VERT OUTPUT
V10 6DT5
DO NOT MEASURE
DEFLECTION YOKE
VERT HOLD
HEIGHT
VERT LINEARITY
570V BOOST
TO AUDIO OUTPUT TRANS T1
TV
PHONO
TV-PHONO SW ON TONE CONTROL
REMOTE ON-OFF SW
CHANNEL PRESELECT SWITCH
POWER TUNING SW
SW ON VOL CONTROL
LV RECT
V13 5U4GB
REMOTE CHASSIS SOCKET
HORIZ AFC
V8 6BJ8
HORIZ MULT
V11 6CG7
HORIZ MULT
HORIZ OUTPUT
V12 6DQ6A
HV RECT
V14 1B3GT
TO PICTURE TUBE HV ANODE (UL 50V-30KV) 1HV
DAMPER
V15 6DA4
HORIZ HOLD
HORIZ DRIVE
285V SOURCE
255V SOURCE
245V SOURCE
120V SOURCE
100V SOURCE
255V B SOURCE
570V BOOST SOURCE
TERMINAL VIEW HORIZ OUTPUT TRANS
DENOTES CHASSIS GROUND
MEASURED IN PHONO POSITION
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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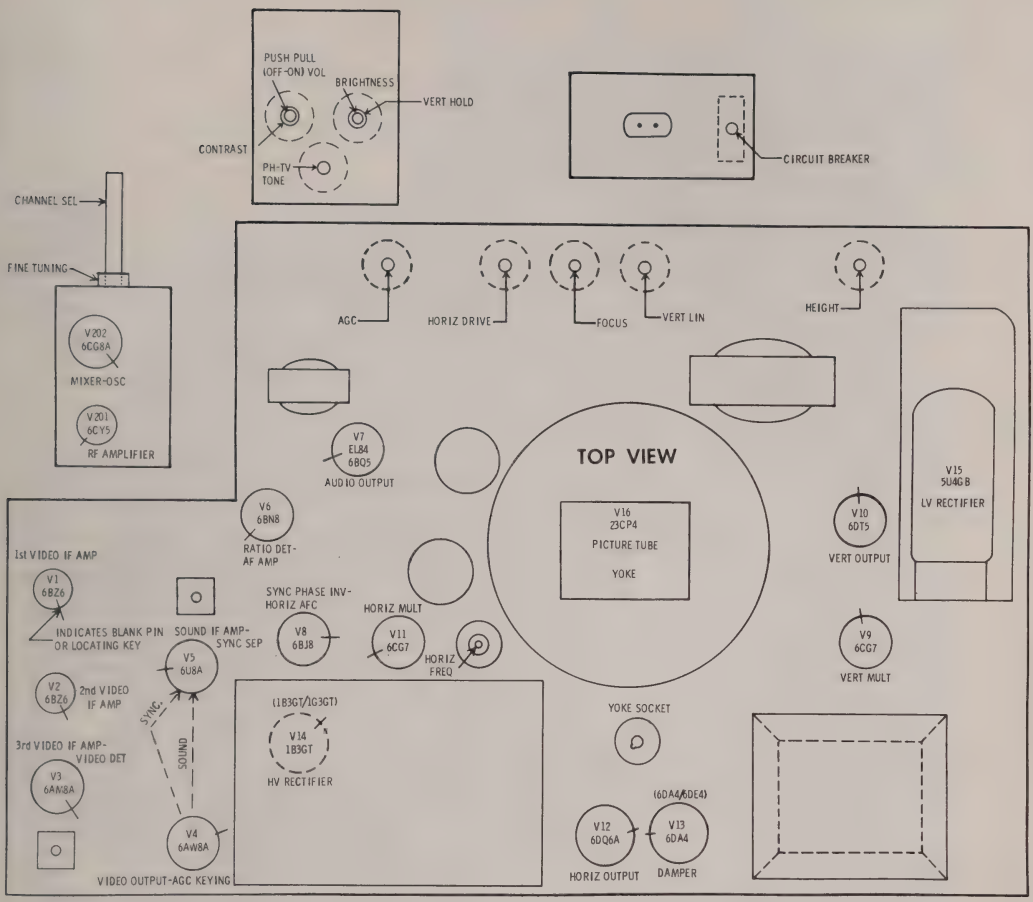
HOFFMAN CHASSIS
334, 307002, 307003

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Circuit Breaker, V15

SWEEP FAILURE
No raster, has sound V11, V12, V13, V14, V16
No vertical deflection V9, V10
Poor vert. linearity or foldover V9, V10
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V11, V12, V13, V15
Vert. off freq. V9
Horiz. off freq. V8, V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V16
Has pic, no sound V5, V6, V7
Overloaded picture V4

SYNC FAILURE
No vert. sync V5, V8
No horiz. sync V5, V8
No vert. or horiz. sync V5, V8

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Connect negative lead of a 60 volt bias supply to pin 5 (grid) of the Horizontal Output Tube. Positive to chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A1 thru A7, A10 . . . GENERAL CEMENT 8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545
A8, A9 . . . . . GENERAL CEMENT #5097, 8727
WALSCO #2515

VIDEO IF ALIGNMENT

Set Contrast fully counterclockwise.
Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on VTVM.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect a 1000mmf capacitor across VTVM leads.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side to ungrounded tube shield floating over Mixer-Osc. (V202). Low side to chassis.	Not used	43.75MC (Unmod)	Between channels	USE VTVM DC probe thru 10K to point (B). Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	45.25MC	"	"	A2	"
3.	"	"	47.25MC	"	"	A3	Adjust for MINIMUM deflection using maximum core separation.
4.	"	"	43.25MC	"	"	A4	Adjust for maximum deflection.
5.	"	"	43.75MC	"	"	A5	"
6.	"	"	47.25MC	"	"	A6	Adjust for MINIMUM deflection using maximum core separation.
7.	"	"	45.50MC	"	"	Mixer Plate Coil	Adjust for maximum deflection.
8.	"	44.0MC (10MC Swp)	45.0MC 45.75MC	"	USE SCOPE Vert. Amp. thru 10K to point (B). Low side to chassis.		Check for response curve similar to Fig. 1 with markers as indicated. If necessary, retouch A2, A3 and A4 SLIGHTLY to obtain desired results.

SOUND IF ALIGNMENT

Connect two matched 100K (±1%) resistors in series from point (C) to chassis. The junction of these two resistors is alignment point (E) as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	High side thru .005mfd to point (B). Low side to chassis.	4.5MC (Unmod)	Between Channels	DC probe thru 100K to point (C). Common to chassis.	A7, A8	Adjust for maximum deflection.
10.	"	"	"	DC probe to point (D). Common to point (E).	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

4.5MC TRAP ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	High side thru .005mfd to point (B). Low side to chassis.	4.5MC (Unmod)	Between Channels	RF probe to point (F). Common to chassis.	A10	Adjust for MINIMUM deflection.

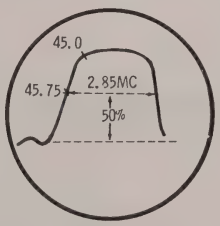
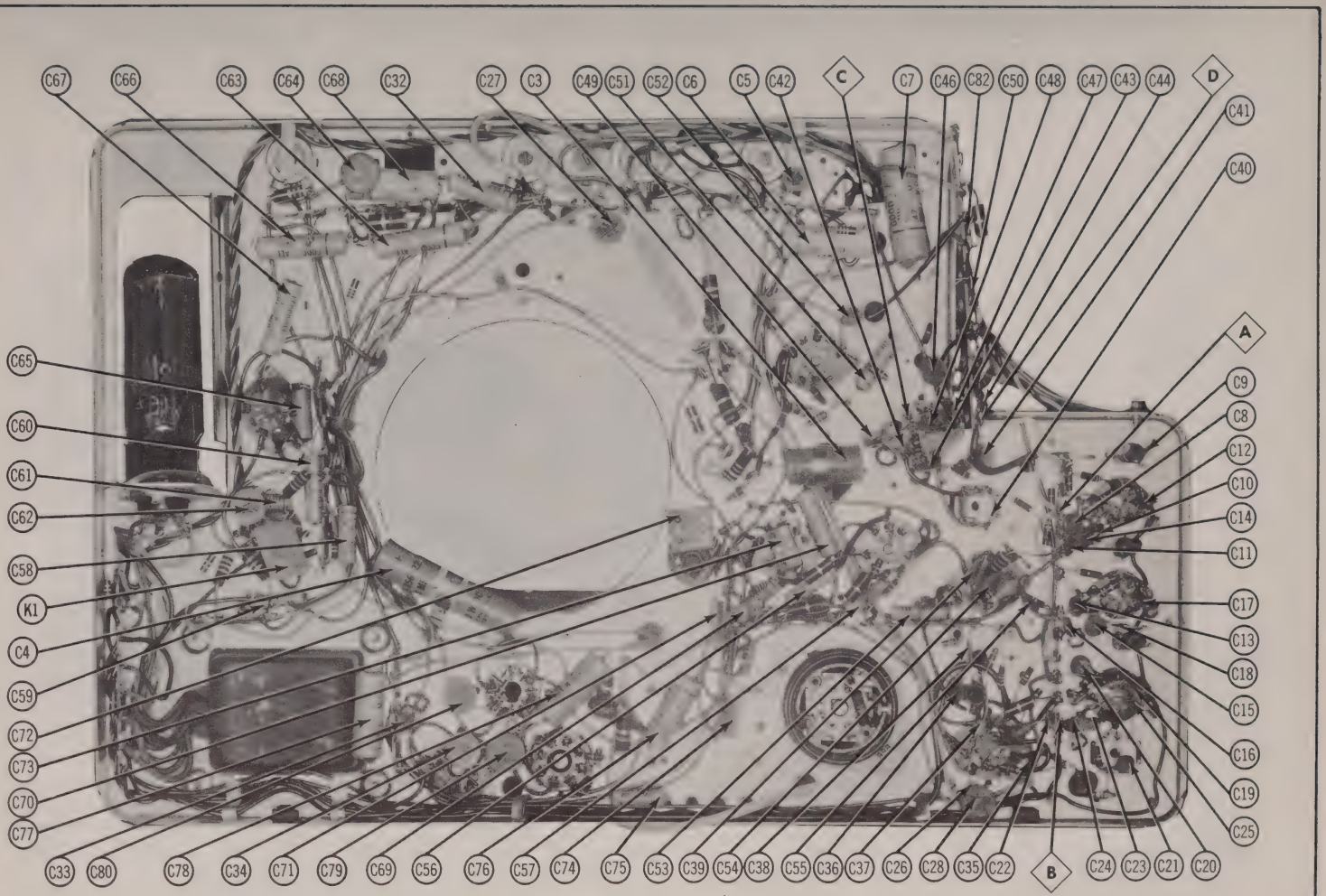
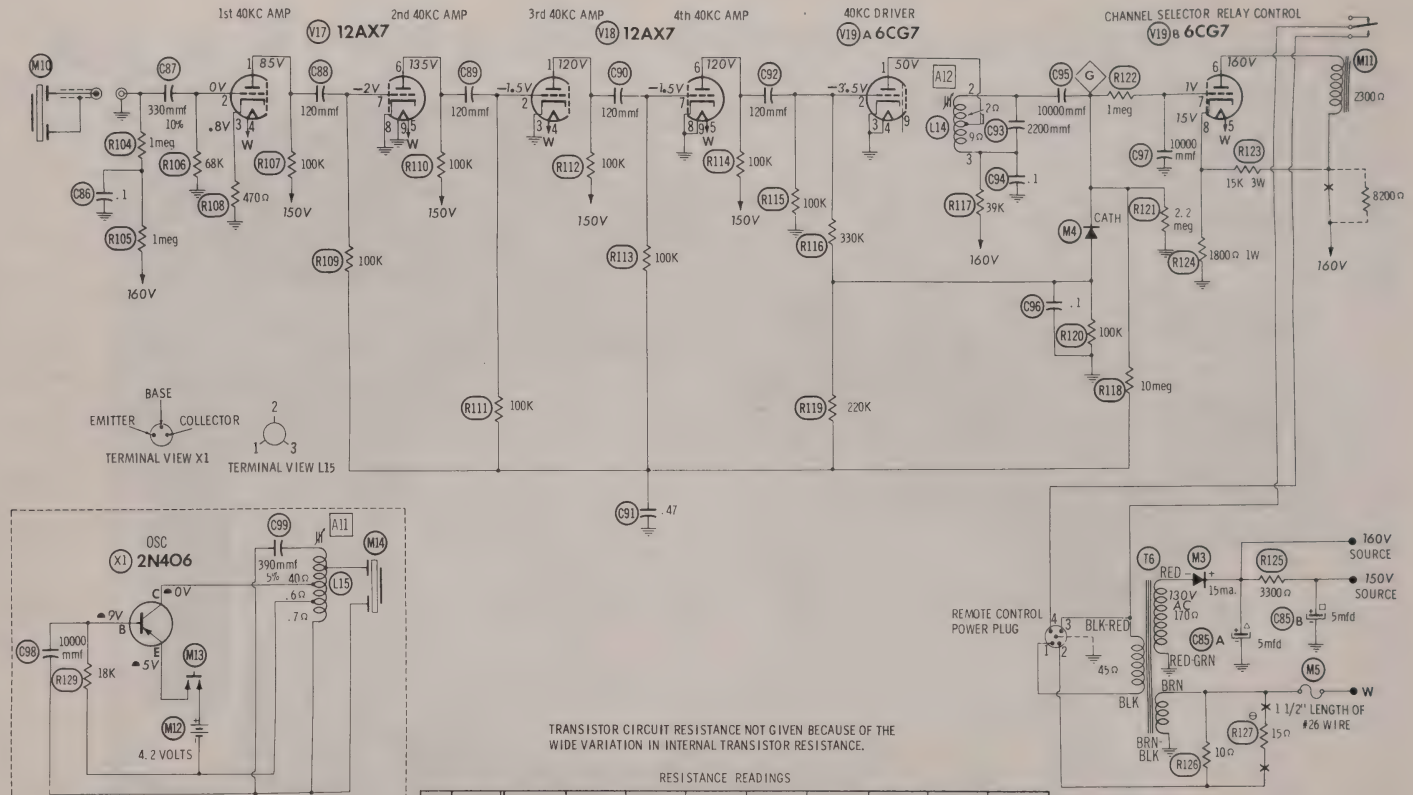


FIG. 1

TUNER ALIGNMENT INSTRUCTIONS PAGE 8
REMOTE CONTROL ALIGNMENT INSTRUCTIONS PAGE 13



TV CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.



TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V17	12AX7	†100K	68K	470Ω	.4Ω	.4Ω	†100K	420K	0Ω	0Ω
V18	12AX7	†100K	420K	0Ω	.4Ω	.4Ω	†100K	420K	0Ω	0Ω
V19	6CG7	†39K	90K	0Ω	0Ω	.4Ω	† 2300Ω	3.2meg	1800Ω	0Ω

† MEASURED FROM OUTPUT OF M3.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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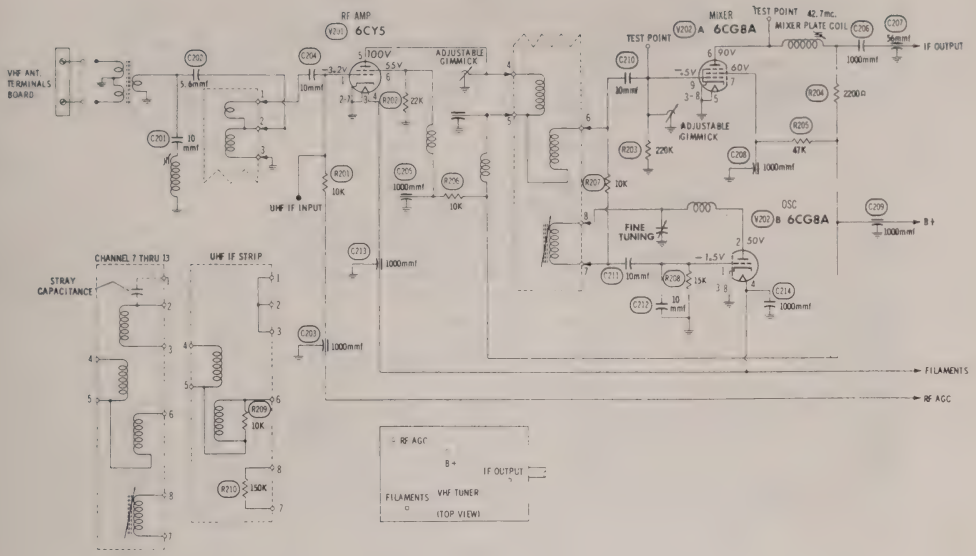
REMOTE CONTROL RECEIVER 307003 AND TRANSMITTER 307002



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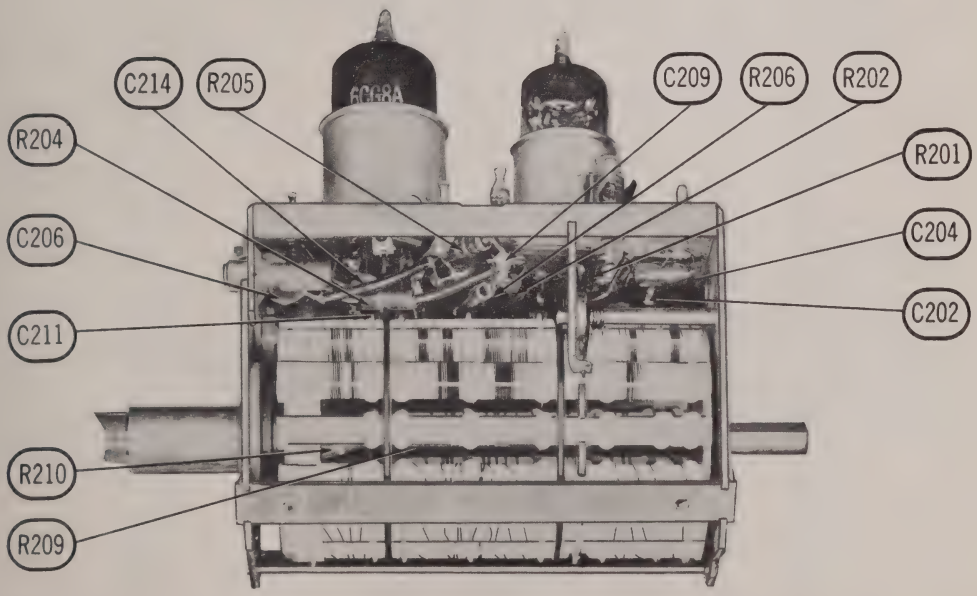
VHF TUNER 710023



VHF TUNER 710023 - RIGHT SIDE

SET 500 FOLDER 1

TUNER PARTS LIST AND DESCRIPTIONS

710023

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amplifier	6CY5	V202	Mixer - Osc.	6CG8A

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	10		DI-10	DD-100	L10Q1	CCD-100	CNO-410	10TS-Q10
C202	5.6					*		
C203	1000		EF-001	MFT-1000		CCF-102	CT280A	
C204	10		DI-10	DD-100	L10Q1	CCD-100	CNO-410	10TS-Q10
C205	1000		EF-001	MFT-1000		CCF-102	CT280A	
C206	1000		BPD-001	DD-102	BYA10D1M	CCD-102	B-210	5HK-D10
C207	56					*		
C208	1000		EF-001	MFT-1000		CCF-102	CT280A	
C209	1000		EF-001	MFT-1000		CCF-102	CT280A	
C210	10		DI-10	DD-100	L10Q1	CCD-100	CNO-410	10TS-Q10
C211	10		DI-10	DD-100	L10Q1	CCD-100	CNO-410	10TS-Q10
C212	10		DI-10	DD-100	L10Q1	CCD-100	CNO-410	10TS-Q10
C213	1000		EF-001	MFT-1000		CCF-102	CT280A	
C214	1000		BPD-001	DD-103	BYA10D1M	CCD-102	B-210	5HK-D10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	10K	
R202	22K	
R203	220K	
R204	2200Ω	

ITEM No.	RATING	REMARKS
R205	47K	
R206	10K	
R207	10K	
R208	15K	

ITEM No.	RATING	REMARKS
R209	10K	
R210	150K	

TUNER ALIGNMENT INSTRUCTIONS

TUNER ALIGNMENT

Suggested Alignment Tools: GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531

VHF OSCILLATOR ALIGNMENT

The individual channel adjustment screws are accessible one at a time, thru a hole in the front of the tuner, as the Channel Selector is rotated. Set the Fine Tuning to the center of its range and switch to channel to be adjusted. Adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

TV PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	1st Video IF Amp.	6BZ6
V2	2nd Video IF Amp.	6BZ6
V3	3rd Video IF Amp. - Video Detector	6AM8A
V4	Video Output - AGC Keying	6AW8A
V5	Sound IF Amp. - Sync Sep.	6U8A
V6	Ratio Det. - AF Amp.	6BN8
V7	Audio Output	EL84/6BQ5
V8	Sync Phase Inverter - Horiz. AFC	6BJ8
V9	Vert. Mult.	6CG7
V10	Vert. Output	6DT5
V11	Horiz. Mult.	6CG7
V12	Horiz. Output	6DQ6A
V13	Damper	6DA4 (6DA4/6DE4) *
V14	HV Rectifier	1B3GT (1B3GT/1G3GT) *
V15	LV Rectifier	5U4GB

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	HOFFMAN PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V16	23CP4		23CP4 ①		23CP4 ②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▲80	400	857105	AFH4-93-50	C0370	FP420.46	TMT-43	TVLS-4657.8*	
B	20	300			BR2035		TD-20-350		
C	■40	350							
D	▲20	300							
C2A	▲100	350	857104	AFH4-05-06	D0044	FP425.6	TMQ-194	TVLS-4635.10*	
B	■40	350							
C	10	350							
D	▲10	350							
C3	5	50	856006	PRS1310	BBR5-50	TC30	TD-5-50	TVA-1303	
C4	4	600	856022	PRS1845	BRHV604		TD-8-600	TVA-1962	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C6	.22 200V		P288N-22		CUB2P22	2DP-3-224	GEM-2022	2TM-P22
C7	.47 200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C8	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C9	33 NPO		NPO-DI 33	DTZ-33	C10Q33C	CCTO-330	CNO-433	10TCC-Q33
C10	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C11	1000		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-DI0
C12	1000		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-DI0
C13	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C14	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C15	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C16	1000		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-DI0
C17	1000		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-DI0
C18	47 NPO		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C19	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C20	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C21	1000		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-DI0
C22	1000		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-DI0
C23	4.7 10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C24	4.7 10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C25	1000		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-DI0
C26	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C27	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C28	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C29	47 10%		NPO-DI 47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C30	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C31	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C32	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C33	24 2000V 10%				HVA20Q22		2DY-422	
C34	82 3000V N750 10%	#850103						
C35	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C36	47 10%		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C37	4.7 10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C38	47 10%		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C39	4700		BPD-0047	DD-472	C10V47C	CCD-472	B-247	5HK-D47
C40	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C41	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C42	1000		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-DI0
C43	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C44	10000		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-SI0
C45	5600		DI-5600	DD-562		CCD-562	B-256	10TS-D56
C46	.01 400V		P488N-01	D6-103	CUB4SI	4DP-1-103	GEM-401	4TM-SI
C47	820 10%		DI-820	DD-821	1R5T82	CCD-821	GP382	10TS-T82
C48	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C49	1000		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-DI0
C50	5600		DI-5600	DD-562		CCD-562	B-256	10TS-D56
C51	.01 400V		P488N-01	D6-103	CUB4SI	4DP-1-103	GEM-401	4TM-SI
C52	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C53	.0022 400V		P488N-0022	D6-222	CUB6D22	6DP-1-222	GEM-6222	6TM-D22
C54	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C55	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C56	.001 400V 10%		V84C6DI-10%		PM6DI	6DP-1-102	GP210	6TM-DI

TV PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	FILAMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C87	.001 600V 10%		VM42B2-10%		PM6D1	6DP-1-102	GP200	6TM-D2
C88	.0047 200V 10%		VM42D47-10%		PM6D47	6DP-1-472	JL-247	6TM-D47
C89	.01 300V 10%		VM42B2-10%		PM6B	6DP-1-103	GEM-4161	6TM-B
C90	.047 300V		P388N-047	DD-503	CUB3D47	4DP-3-473	GEM-4147	2TM-S47
C91	.0033 500V		P86N43M-0039	DD-393	CUB4D4	6DP-1-392	GP938	6TM-D4
C92	330		DE-330	DE-331	6GT32	CC-331	GP332	0TH-T33
C93	.022 600V		P668N-022	DD-203	CUB6S22	6DP-1-223	GEM-6122	6TM-S22
C94	20000		BPD-020	DD-203	TYB6S2	CC-203	B-120	5HK-B20
C95	.01 600V		P668N-01	D6-103	CUB6B	6DP-1-103	GEM-611	6TM-S
C96	.033 600V		P668N-033	DD-203	CUB6S33	6DP-1-333	GEM-6133	6TM-S33
C97	.01 1500V		P1664CM-01	DD6-103	CUB16B	16DP-3-103	GEM-1611	MB-16
C98	.22 300V		P388N-022	DD-224	CUB4D22	4DP-3-223	GEM-4122	4TM-S22
C99	.0047 300V 10%		VM42D47-10%		PM6D47	6DP-1-472	JL-247	6TM-D47
C70	.047 300V 5%		P388N-047	DD-503	CUB3D47	4DP-3-473	GEM-4147	2TM-S47
C71	100 10%		1469-0001	TCZ-100	22B5T1	CM-19B-101K	MC2B35	MS-310
C72	3900 10%		1469-0039		1R5D39	CM-20B-392K	MC7402 5	MS-239
C73	470 10%		1469-0047		3R5T47	CM-19B-471K	MC2266	MS-247
C74	330 10%		1469-0033		3R5T33	CM-19B-331K	MC2241	MS-233
C75	.001 400V 10%		VM42E1K-10%		PM6DL	6DP-1-102	JL-210	6TM-DL
C76	.1 600V		P488N-1	DF-104	CUB4P1	6DP-3-104	GEM-4101	6TM-P1
C77	.047 600V		P668N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C78	.068 600V		P668N-068		CUB6S68	6DP-4-683	GEM-6168	6TM-S68
C79	170 3000V 10%	#6801099						
C80	170 3000V 10%	#6801099						
C81	100 3000V 5%							
C82	4700		BPD-0047	DD-472	BYAU047M	CCD-472	B-247	5HK-D47
C83	.047 600V		P888N-047	DD-503	CUB6M47	6DP-3-473	GEM-6147	6TM-S47
C84	10000 1500V		DAC-37	DDH6-103	HVE6B	16DP-3-103	28V-110	BL-B10

Hoffman Part Number.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: HOFFMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	300Ω	½	8030340					Contrast Volume
B	500K	½			RTV-707	† CU-1330		
	250K Tap							
	Switch							Power Off-On (Push-Pull)
R2A	1.5meg	½	8030348	F1-54				Vert. Hold
B	150K	½		R2-33	RTV-704	† CU-1141	■ EV4068	Brightness
R3A	1meg	½	8000369					Tone
B	Switch							TV-Phone
R4A	100K	½	8000338	AB-410	B4T-100K-S	BU-128	PTA15L	AGC
B	Shaft			AK-15	Not Req.	T366	Not Req.	
R5A	100K	½	8000360	AB-514	B4T-10E-S	BU-116	BU-20	Horiz. Drive
B	Shaft			AK-15	Not Req.	T366	Not Req.	
R6A	4meg	½	8000361	AB-366	B4T-4meg-S	BU-340	PTA5EL	Focus
B	Shaft			AK-19	Not Req.	T366	Not Req.	
R7A	1meg	½	8000339	AB-459	B4T-1meg-S	BU-137	PTA12E4L	Vert. Linearity
B	Shaft			AK-19	Not Req.	T366	Not Req.	
R8A	1meg	½	8000339	AB-459	B4T-1meg-S	BU-137	PTA12E4L	Height
B	Shaft			AK-19	Not Req.	T366	Not Req.	

◆ "Concentrikit" Equivalent: K-16 Kit with Base Elements and Shafts: BU-103, P17-130 (Panel)

† "Concentrikit" Equivalent: K-6 Kit with Base Elements and Shafts: BU#-153X, R33-305 (Rear)
(Not available as a factory assembled unit.) BU-138, P17-130 (Panel)
BU-238, RU-300 (Rear)

■ "RTA-LOC" Equivalent: FA15EL, RU24L1, GP3625, BS125.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R9	470Ω	
R10	470Ω	
R11	47K	
R12	3300Ω	
R13	470Ω	
R14	470Ω	
R15	33K	
R16	3200Ω	
R17	470	
R18	15K	
R19	1000Ω	
R20	22K	
R21	150Ω	
R22	12K	
R23	4.7MΩ	
R24	4700Ω 4W	
R25	22K 2W	
R26	820Ω 1W	
R27	470K	
R28	2.7meg	
R29	47K	
R30	470K	
R31	15K	
R32	39K	
R33	22K	
R34	56K	
R35	820K	
R36	120K	
R37	220K	
R38	47K	
R39	15K	
R40	47K 1W	

ITEM No.	RATING	REMARKS
R41	4700Ω	
R42	220Ω	
R43	47K	
R44	6800Ω	
R45	68K	
R46	4.7meg	
R47	22K	
R48	1000Ω	
R49	680K	
R50	330K	
R51	100Ω	
R52	100Ω	
R53	39K 1W	
R54	1800Ω 2W	
R55	33K	
R56	330K	
R57	2.2meg	
R58	120K	
R59	2200Ω 1W	
R60	2200Ω 1W	
R61	2200Ω 1W	
R62	1800Ω 1W	
R63	560Ω	(470Ω) *
R64	22K	
R65	68K 1W	
R66	1000Ω	
R67	100K	
R68	220K	
R69	680K 1W	
R70	33K	
R71	1.2meg	
R72	100Ω	

ITEM No.	RATING	REMARKS
R73	47K 1W	
R74	27K 1W	
R75	2200Ω	
R76	150Ω 2W	
R77	220Ω	
R78	220Ω	
R79	3Ω (Cold)	
R80	15Ω 2W	
R81	100K	
R82	100K	
R83	470K	
R84	220K	
R85	6800Ω	
R86	1500Ω	
R87	100K	
R88	100K	
R89	470Ω	
R90	100Ω	
R91	470K	
R92	100Ω	
R93	39K 2W	
R94	130K	
R95	4700Ω	
R96	2.3Ω	
R97	1000Ω 1W	
R98	1000Ω	#825439
R100	100Ω 10W	#825377
R101	1.5meg	
R102	1meg	
R103	330K	

Hoffman Part Number.
* Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Miller PART No.	Rem PART No.	NOTES
L4A	1st Video IF	782033				
B	47.25MC Trap					

COILS* (RF-IF) (cont)

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Miller PART No.	Rem PART No.	NOTES
L3	2nd Video IF	782031	TV-130	6319	VT-3	
L3A	3rd Video IF	782032		6323		
B	47.25MC Trap					
L4	4th Video IF	782039	TV-126	6334		
L5	RF Choke	775004	RC-646	4800		8.5uh IRC Part #CLA
L6	Series Peaking Coil	775008	TV-116	6113	VP-3	100uh
L7	Shunt Peaking Coil	775011	TV-107	6156		330uh
L8	4.5MC Trap	782005	TV-131	1468	SP-3	
L9	Series Peaking Coil	775013	TV-127	6154		330uh
L10	Sound Take-Off Coil	782006	TV-125	6155	SP-3	
L11	Ratio Detector	774006	TV-118	6306	SD-4	
L13	Fil. Choke	775063	RC-562	4804	VP-9	1.5uh IRC Part #CLA

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Rem PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
LI3	Horiz. Stab.	766017	TV-153	6210	H-102	RC-110	RTC-6622	HS-5	WLC-35

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC 1	SEC 2	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Rem PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V @ 2A	340VCT @ 180mA	5V @ 3A	710030-1 ①							R-80BC ③
	SEC 3	SEC 4	SEC 5								
	6.3V @ 6A	6.3V @ 6.2A									

① Alternate Part #718020.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Rem PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Vert. Output	723010						
T3	Yoke Horiz. (135MC) (110°) Vert. (135MC)	770001-1		Y-110 ①③		DY-27A①②	Y-48 ①③	Y-80 ③
	Alt. Yoke	770001						Y-110
	Rear Cover and Centering Device	778946 ■						
T4	Horiz. Output	782009	HVO-116 *	X166 *		HO-289 *	FLY-150 ④	D-160 ① *

① Use original rear cover and centering device, yoke damping network if necessary.
② Use original yoke plug and connect same as original.
③ Connect yoke terminal #3 to plug #2, yoke #1 and #5 to plug #5; yoke #10 to plug #8.
④ Drill new mounting hole(s).
⑤ For transficient sweep connect approximate 100mmf ⑥ 4KV across terminal #1 and #3.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type is Listed

ORIGINAL TERMINAL CONNECTIONS	Merit Replacement Connections	Rem Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
8	5	5		5	5	5
7	4	4		4	4	4
6	3	3		3	3	3
1	1	1		1	1	1

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Rem PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	8000Ω	3-4Ω	724031	A-3030	AU-800	A-3823	26848	S-92	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V C IMP	REPLACEMENT DATA: HOFFMAN PART No.	GUAM PART No.	NOTES
SP1 SP3	4" x 6" 3½" 8"	PM PM PM	3-4Ω 6-8Ω 2-4Ω	708903 * 708909 * † 708901 †	48A1 3A0Q28.4 8A2L	* Used in Models WR3653, WR3663, BR3653, SPR3653. † Used in Models BR3663, WR3653, SPR3663, WR3663, BR3673, WR3673, SPR3673, WR3673, RR3663, WR3663, SPR3663, WR3653.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	HOFFMAN PART No	REPLACEMENT DATA
K1	Vert. Integrator	2200mmf, 4700mmf, 4700mmf, 820Ω, 330Ω, 33K	968001-2 ①	Aerovox PA-110 Centralab PC-100 Cornell-Dubilier 1U37M1 Mallory MS-100 Sprague V-1/V-3

① Alternate Part #986001

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M1	Tuner	710033	VHF
M2	Circuit Breaker Lite Scope Cell Assembly	953091 813008	Includes (Lite Scope Cell #678001)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Mask	537005	Maple, Models SPR3653, SPR3663, SPR3673, SPR3683
Mask	537004	Blonde, Models BR3653, BR3663, BR3673, BR3683
Mask	537003	Mahogany, Models MR3653, MR3663, MR3673, MR3683
Mask	537002	Walnut, Models WR3653, WR3663, WR3673, WR3683
Knob	498014	Fine Tuning
Knob	508017	Volume, Brightness
Knob	513024	Contrast, Vertical Hold
Knob	508019	Tone
Pushbutton	800050	Channel Selector
Cabinet	354064	Walnut, Model WR3653
Cabinet	353969	Walnut, Model WR3663
Cabinet	354060	Walnut, Model WR3673
Cabinet	353973	Walnut, Model WR3683
Cabinet	354065	Mahogany, Model MR3653
Cabinet	353970	Mahogany, Model MR3663
Cabinet	354061	Mahogany, Model MR3673
Cabinet	353974	Mahogany, Model MR3683
Cabinet	354066	Blonde, Model BR3653
Cabinet	353971	Blonde, Model BR3663
Cabinet	354063	Blonde, Model BR3673
Cabinet	353975	Blonde, Model BR3683
Cabinet	354067	Maple, Model SPR3653
Cabinet	353972	Maple, Model SPR3663
Cabinet	354062	Maple, Model SPR3673

WIRING DATA

High Voltage Lead	Use BELDEN No. 8809
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8474
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8225 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) – 4 Conductor 8465 (Round) – 5 Conductor 8488 (Round) – 8 Conductor

REMOTE CONTROL RECEIVER AND POWER TUNING PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	GENERAL ELECTRIC ◆ TYPE	RAYTHEON ◆	SYLVANIA ◆
V1T	1st 40KC Amp.- 2nd 40KC Amp.- 3rd 40KC Amp.-	12AX7		
V1S	4th 40KC Amp.	12AX7		

ITEM No.	USE	TYPE
V19	40KC Driver – Channel Selector Relay Control	6CQ7

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT.	REPLACEMENT DATA: HOFFMAN PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C85A	45	300	854706	AFH3-46	BG363	WP330.9	TMD-46	TVL-3748	
B	60	300							

REMOTE CONTROL RECEIVER AND POWER TUNING (Continued)

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C86	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C87	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C88	120		DI-120	DD-121	L10T12	CCD-121	GP312	10TS-T12
C89	120		DI-120	DD-121	L10T12	CCD-121	GP312	10TS-T12
C90	120		DI-120	DD-121	L10T12	CCD-121	GP312	10TS-T12
C91	.47 200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C92	120		DI-120	DD-121	L10T12	CCD-121	GP312	10TS-T12
C93	2200 10%		1464-0022		1R5D22	CM-20B-222K	MCJ459	MS-222
C94	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C95	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C96	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C97	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R104	1meg	
R105	1meg	
R106	68K	
R107	100K	
R108	470Ω	
R109	100K	
R110	100K	
R111	100K	

ITEM No.	RATING	REMARKS
R112	100K	
R113	100K	
R114	100K	
R115	100K	
R116	330K	
R117	39K	
R118	10meg	
R119	220K	

ITEM No.	RATING	REMARKS
R120	100K	
R121	2.2meg	
R122	1meg	
R123	15K 3W	
R124	1800Ω 1W	
R125	3300Ω	
R126	10Ω	
R127	15Ω	Note 1
R128	33Ω	

Note 1. May not be used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		HOFFMAN PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L14	40.75KC Coil	762026				

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	SEC. 2	HOFFMAN PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T6	117V @ .16A	130V @ .015A	6.3V @ 1.3A	716029						

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	HOFFMAN PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M3 M4	.015A	746003 ♦ 744005 *	RE504 ♦	1N1764 ♦	2F4 ♦	SP200 ♦	♦ Silicon Type * Selenium Diode

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			HOFFMAN PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M5	1½" length of #26 wire							

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M6	Switch	900009	Power Tuning
M7	Motor Switch Ass'y	715009	Includes (Muting Switch, Remote Defeat Switch, Pre-Selector Defeat Switch, and Motor)
M8	Remote Off-On Assembly	904007	Includes Remote Off-On Switch
M9	Pre-Selector Ass'y	904008	Includes Pre-Selector Switch
M10	Transducer	976007	Receiver
M11	Relay	998004	Channel Selector Control

REMOTE CONTROL TRANSMITTER
PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N406	Osc.		2N406	2N633	2N406	PNP

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C98	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C99	390 5%		1469-00039		5R5T33	CM-19B-391J	MCB243	MS-339

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R129	18K	

ITEM No.	RATING	REMARKS

ITEM No.	RATING	REMARKS

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		HOFFMAN PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L15	Osc. Coil	768018				

BATTERIES

ITEM No.	VOLTAGE	HOFFMAN PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M12	4.2V	930004				E-163		TR-163	

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M13	Switch	976005	Pushbutton
M14	Transducer		Transmitter

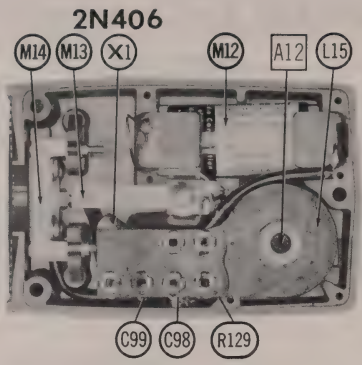
REMOTE CONTROL
ALIGNMENT INSTRUCTIONS

REMOTE CONTROL TRANSMITTER ALIGNMENT

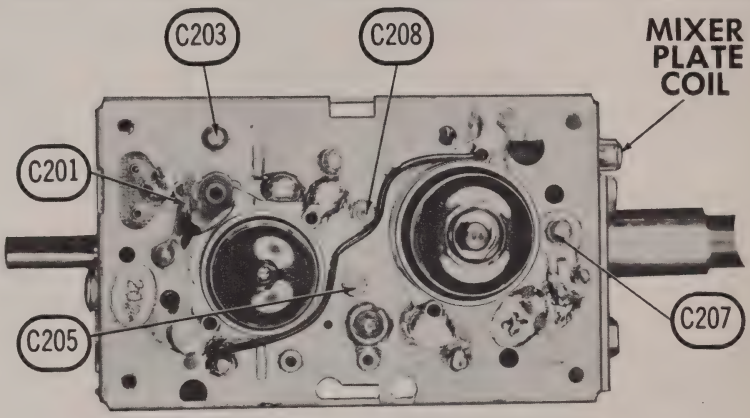
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side to Horizontal input terminals of scope. Low side to ground terminal. (If available, a second transmitter may be substituted for the generator.)	20.375KC (Unmod.)		Vert. Amp. probe of scope placed near transmitter. Low side to negative side of transmitter battery.	All	Depress transmitter button and adjust All for zero beat on scope.

REMOTE CONTROL RECEIVER ALIGNMENT

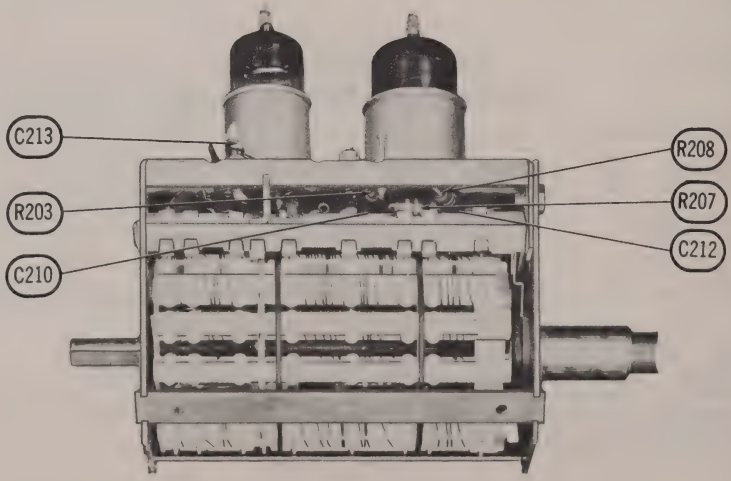
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
2.	High side thru .01mfd to input jack of receiver. Low side to chassis.	40.75MC (Unmod.)		DC probe thru 10meg to point (G). Common to chassis.	A12	Adjust for maximum deflection.



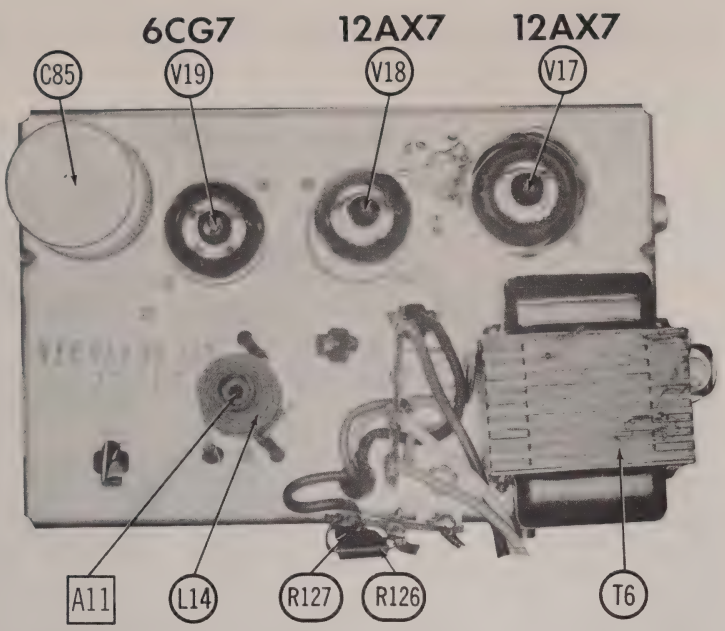
REMOTE CONTROL TRANSMITTER 307002



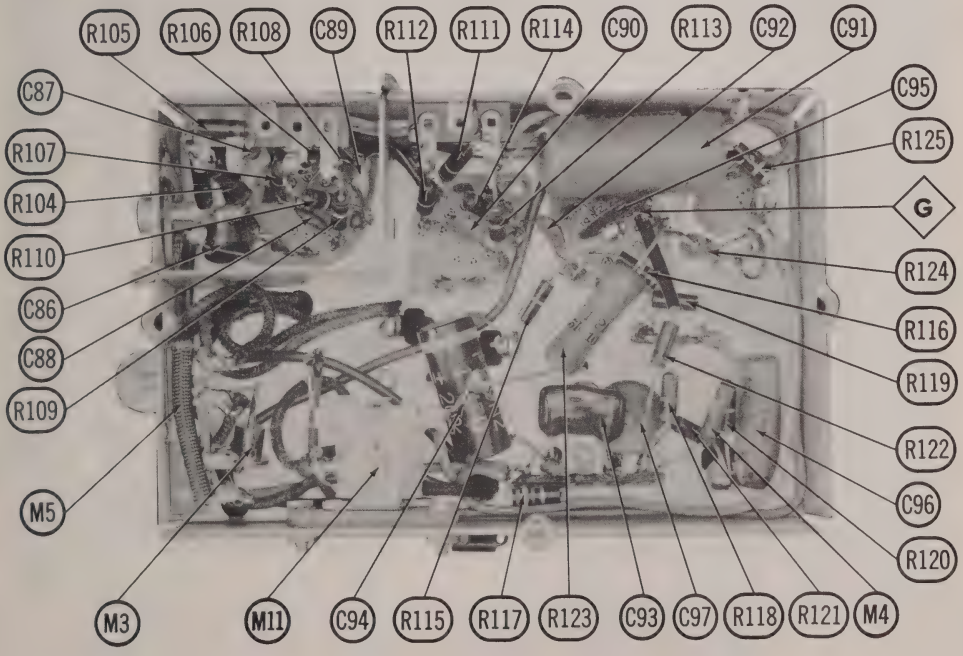
VHF TUNER 710023 - TOP VIEW



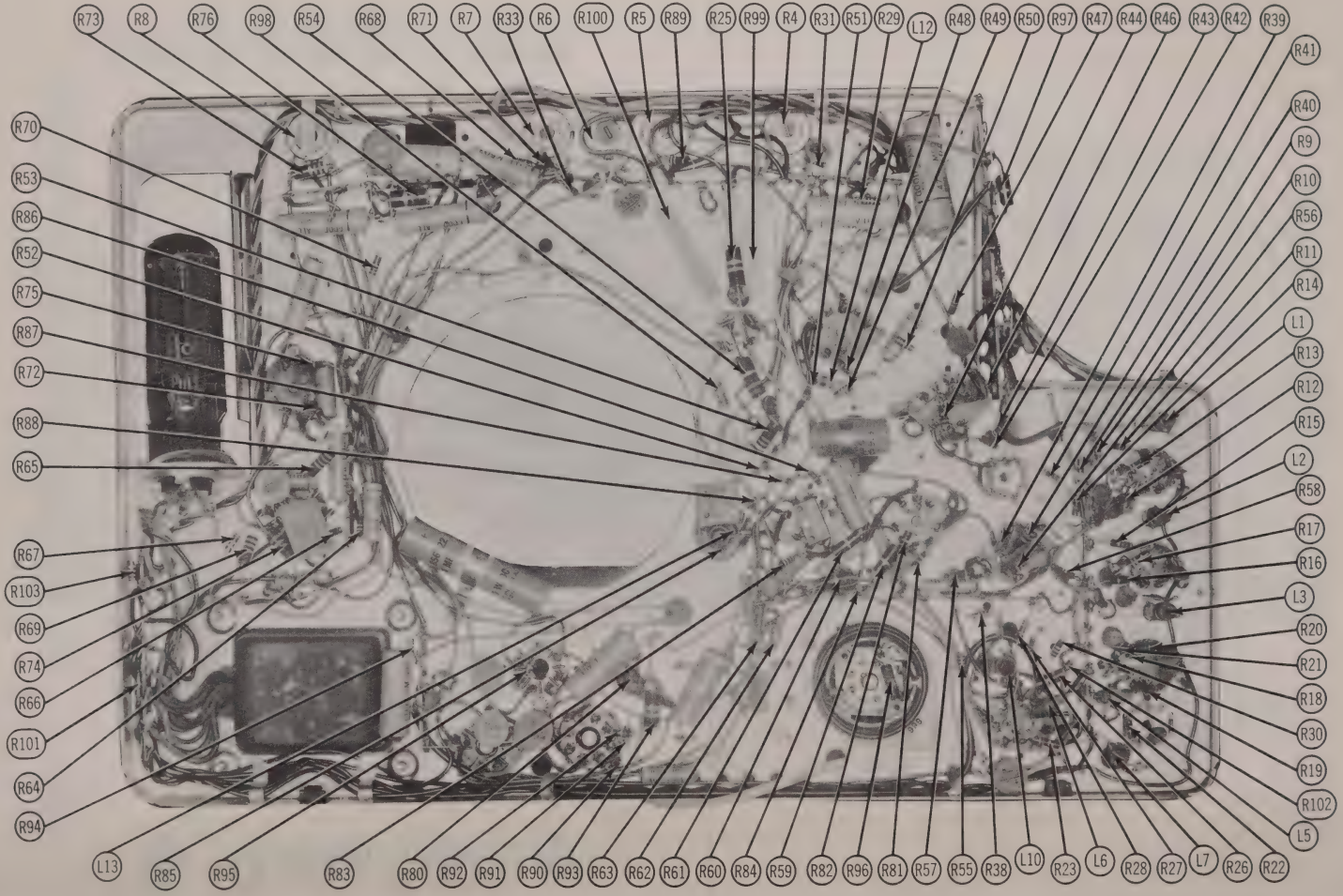
VHF TUNER 710023 - LEFT SIDE



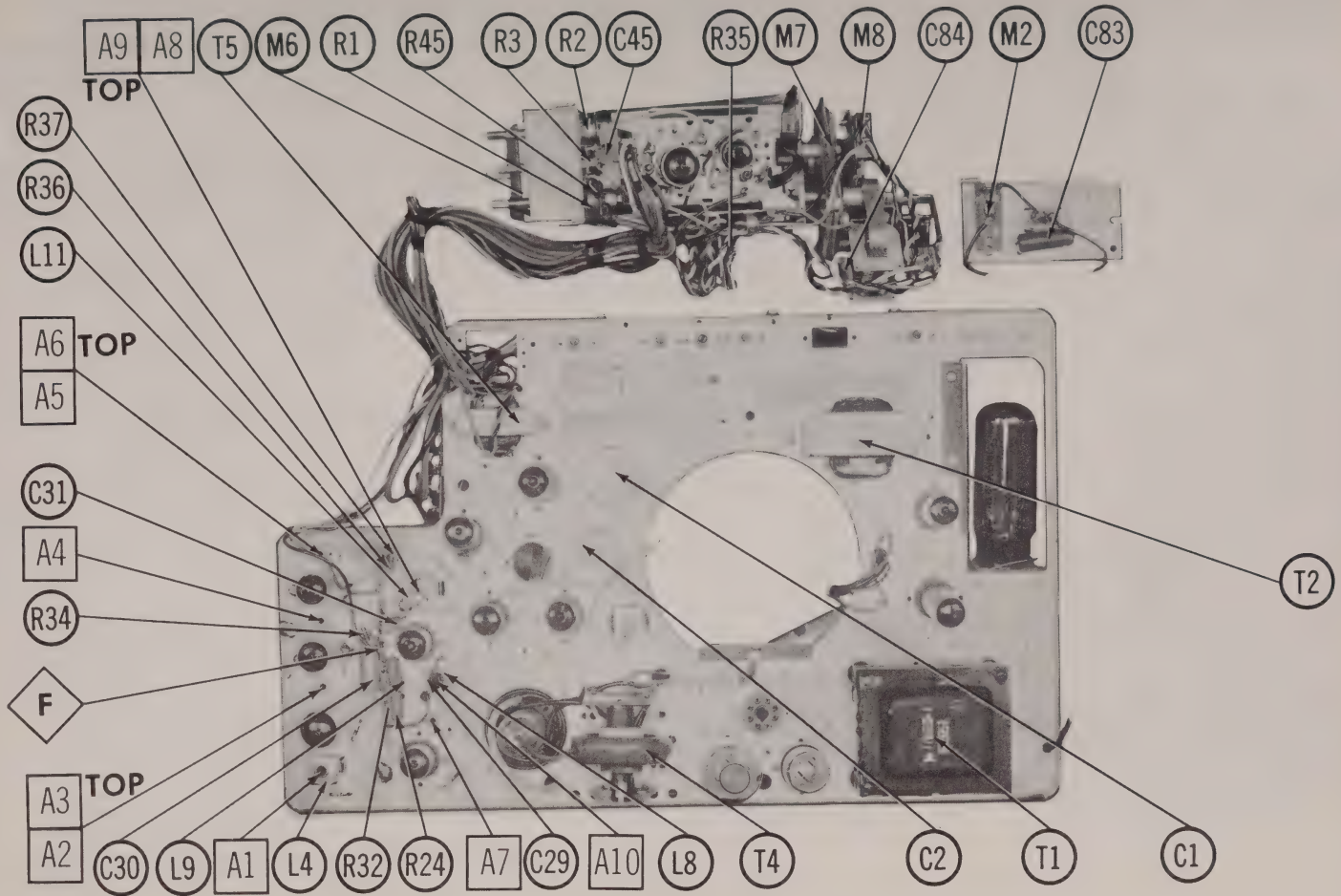
REMOTE CONTROL RECEIVER 307003 - TOP VIEW



REMOTE CONTROL RECEIVER 307003 - BOTTOM VIEW



TV CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.



TV CHASSIS - TOP VIEW

HOFFMAN CHASSIS
354, 307002, 307003

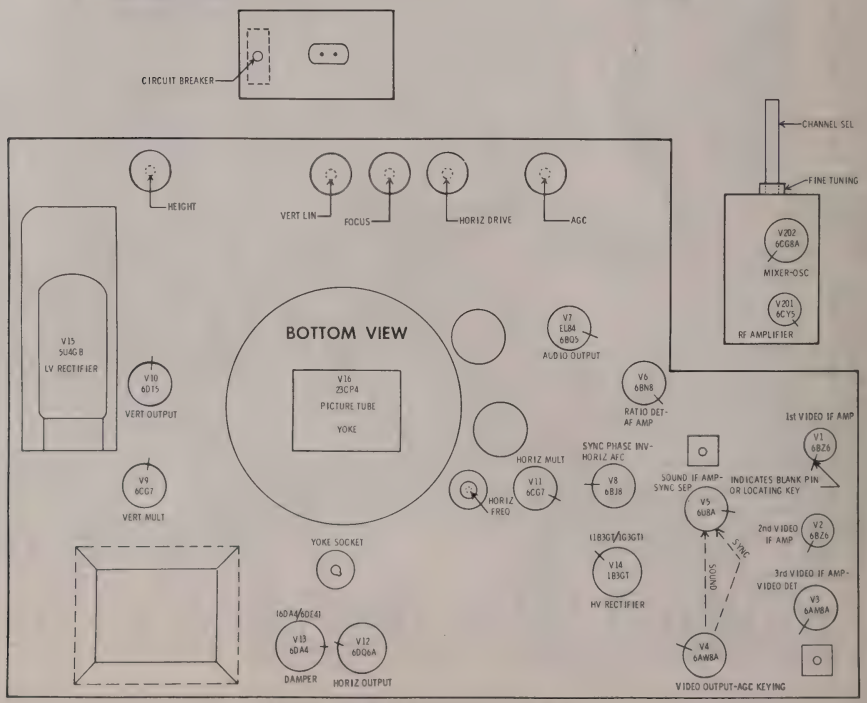
FOLDER 1

RESISTANCE MEASUREMENTS

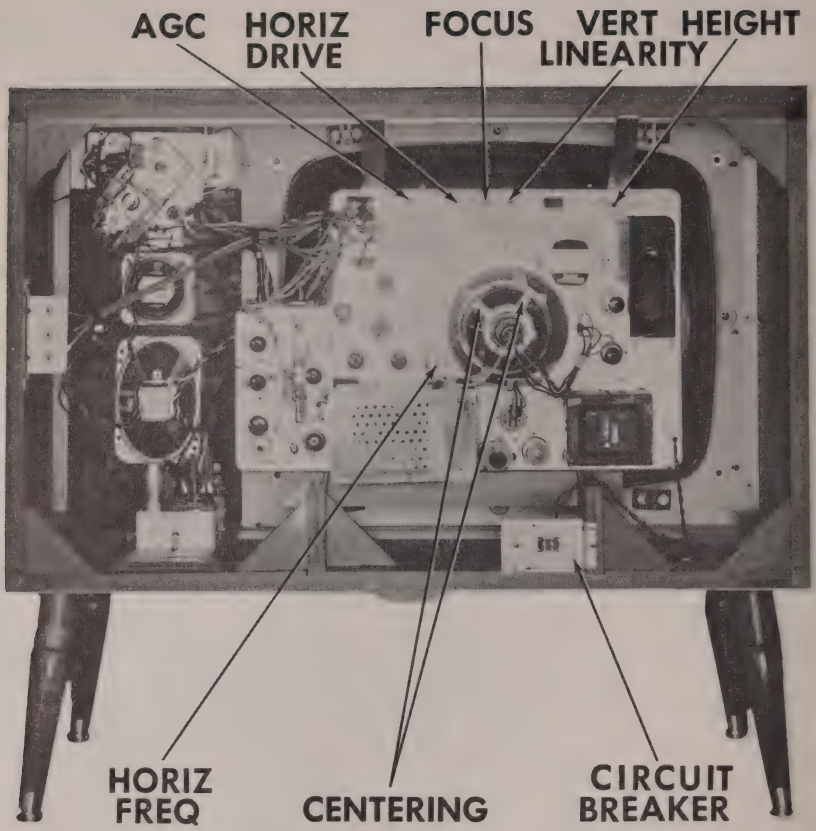
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	• 100K	47Ω	.1Ω	0Ω	†4800Ω	†4800Ω	0Ω		
V2	6BZ6	• 100K	47Ω	.1Ω	0Ω	†4800Ω	†4800Ω	0Ω		
V3	6AM8A	150Ω	.1Ω	†24K	.1Ω	0Ω	†1100Ω	.1Ω	4700Ω	0Ω
V4	6AW8A	†100Ω	†920Ω	• 520K	700K	700K	• 25Ω	4700Ω	†22K	†5500Ω
V5	6U8A	†120K	47K	†25K	0Ω	.1Ω	†7000Ω	0Ω	0Ω	2.5meg
V6	6BN8	INF	0Ω	INF	0Ω	.1Ω	6800Ω	†370K	4.7meg	0Ω
V7	EL84 6BQ5	NC	680K	200Ω	¶Ω	.1Ω	NC	†2100Ω	NC	†41K
V8	6BJ8	15Ω	320K	15Ω	0Ω	.1Ω	320K	†4500Ω	†120K	4500Ω
V9	6CG7	†68K	60K	1000Ω	0Ω	.1Ω	• †1meg	• 2meg	1000Ω	0Ω
V10	6DT5	†3300Ω	NC	• 2.2meg	0Ω	.1Ω	• 2.2meg	0Ω	NC	†400Ω
V11	6CG7	†8000Ω	690K	1500Ω	0Ω	.1Ω	†100K	100K	1500Ω	0Ω
V12	6DQ6A	NC	0Ω	NC	†10K	470K	TP	.1Ω	0Ω	TOP CAP †15Ω
V13	6DA4	NC	NC	¶1meg	NC	†100Ω	NC	.1Ω	0Ω	
V14	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †380Ω
V15	5U4GB	NC	¶	NC	21Ω	NC	19Ω	NC	¶	
V16	23CP4	.1Ω	22K	†120K	•†1meg	NC	NC	• 1meg	0Ω	
V201	6CY5	850K	0Ω	0Ω	.1Ω	†3600Ω	†12K	0Ω		
V202	6CG8A	15K	†13K	0Ω	.1Ω	0Ω	†5800Ω	†50K	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 8 OF V15.
‡ MEASURED FROM PIN 3 OF V13.

NC NO CONNECTION
TP TIE POINT



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the Brightness and Contrast controls for a normal picture.

Turn the Horizontal Hold (Freq.) clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.

Turn to an unused channel. If vertical lines appear near the center of the screen, slowly adjust the Horizontal Drive control until white lines disappear.

If the Horizontal Drive was adjusted, tune in a TV station and repeat Horizontal Hold adjustments. Check horizontal sync by switching off channel and back again.

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL MR3653

1. Remove 9 wood screws holding rear cover. Remove rear cover.
2. Remove 7 push-on type knobs from front of cabinet.
3. Remove picture tube socket, yoke plug, speaker leads, and high voltage lead.
4. Remove 1 screw at top of cabinet and 4 screws in front of cabinet holding tuner assembly.
5. Remove 2 chassis bolts at bottom of cabinet and 2 at top of cabinet.
6. Remove chassis.

PICTURE TUBE REMOVAL

1. Remove 9 wood screws holding rear cover. Remove rear cover.
2. Remove picture tube socket, high voltage lead, and yoke plug.
3. Remove 2 screws at bottom front of cabinet and pull down and out to remove mask.
4. Remove 4 screws holding picture tube mounting bracket.
5. Pull picture tube straight out front.

PHOTOFACT® Folder with CIRCUITRACE®

SYLVANIA MODELS 17B110, 17M101, 17P11 Series (Ch. 547-1, 547-2)

SYLVANIA MODELS 17B110, 17M101, 17P11 Series (Ch. 547-1, 547-2)

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MODEL 17P11

SYLVANIA MODELS 17B110, 17M101, 17P11 Series (Ch. 547-1, 547-2)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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DATE 9—60 SET 500 FOLDER 2

SET 500 FOLDER 2

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL 17P11

1. Remove 6 metal screws holding rear cover. Remove rear cover.
2. Remove 5 push-on type knobs from top of cabinet by pulling straight up (all but channel selector remain with cabinet).
3. Remove speaker leads, HV lead, picture tube socket, and yoke.
4. Remove 2 screws holding chassis. Pull back and lift chassis out of metal cabinet.

PICTURE TUBE REMOVAL

1. Follow steps 1 thru 3 of "Chassis Removal".
2. Remove 3 metal screws (on each side of cabinet) and 2 at top under handle. Remove top section of cabinet.
3. Loosen picture tube mounting bracket and pull picture tube out front.

MODEL 17P11

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

Care should be exercised when connecting test equipment or physically contacting chassis. Isolation devices employed by manufacturer should be checked and properly connected before returning receiver to owner.

TRADE NAME	SYLVANIA Models 17B110, 17M101, 17P11 Series, Chassis 547-1, -2
MANUFACTURER	Sylvania Home Electronics, Div. of Sylvania Electric Products Inc., 700 Ellicott St., Batavia, N. Y.
TYPE SET	Television Receiver
TUBES	VHF - Sixteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 140 Watts, 1.35 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

1. Remove 6 metal screws holding rear cover. Remove rear cover.
2. Remove 8 metal screws holding top section of cabinet and lift up. Tilt mask and glass out and remove.

FUSE

A fuse is used for LV supply protection. (For location, see "Tube Placement Chart".)

A fuse wire is used for LV supply and Filament protection. (For location, see M4 in photo "Chassis Bottom View".)

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, it is necessary to remove the rear cover.

AGC

The AGC may be varied by means of an AGC control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by using jumper on picture tube base (by connecting pin 6 to pin 7 or pin 6 to pin 5).

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by a Horizontal Size control. (For location, see "Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Ratio Detector secondary (All) located bottom of chassis.

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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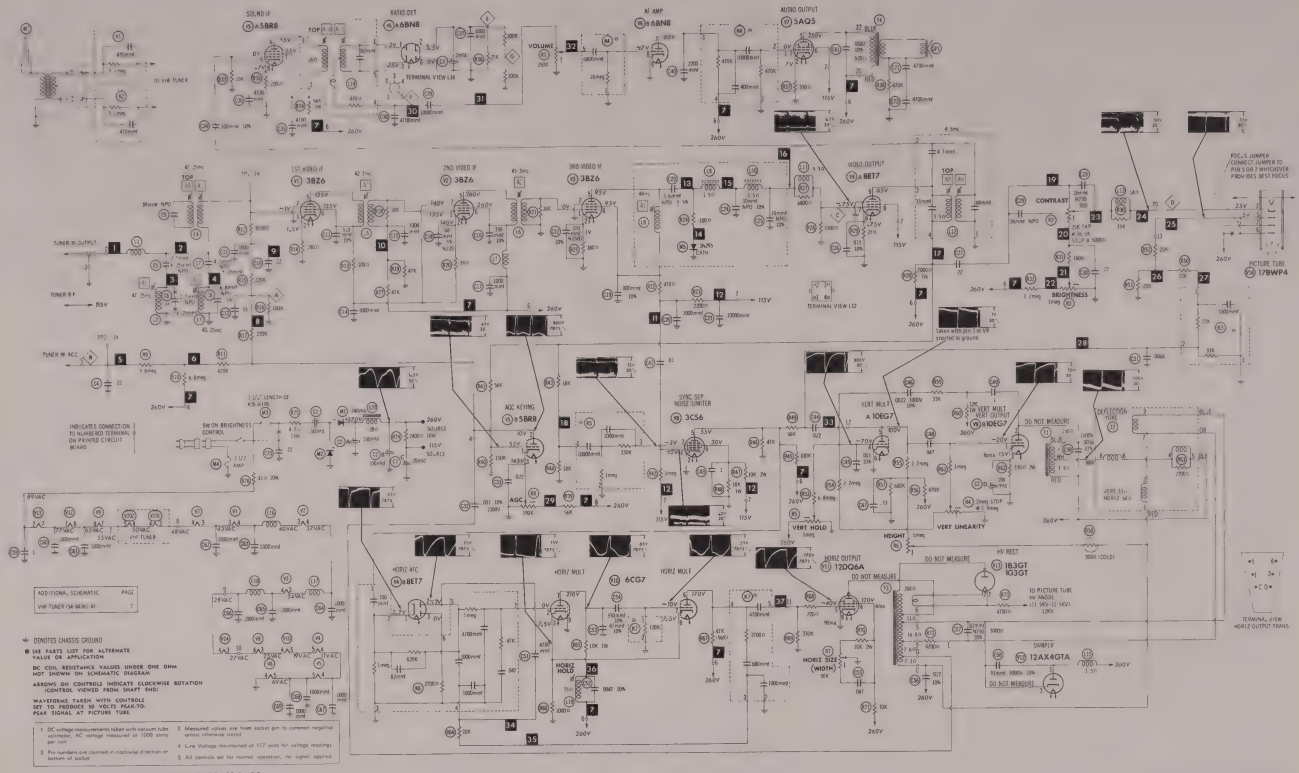
SYLVANIA MODELS 17B110, 17M101, 17P11 Series (Ch. 547-1, 547-2)

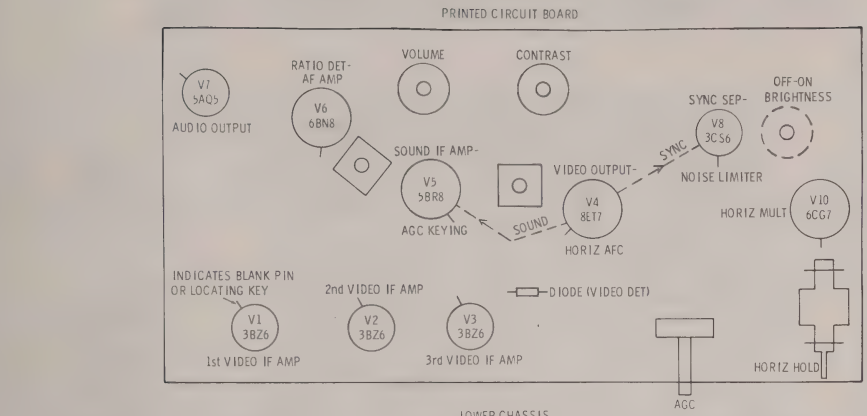
SYLVANIA MODELS 17B110, 17M101, 17P11 Series (Ch. 547-1, 547-2)

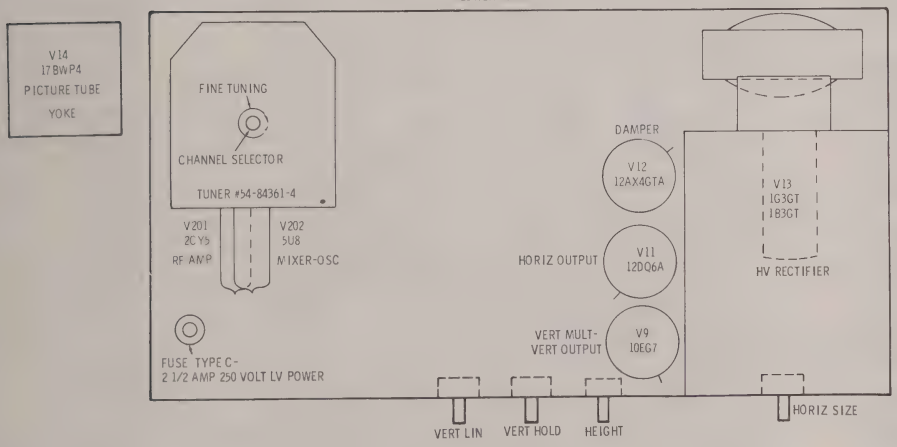
SET 500 FOLDER 2


SYLVANIA MODELS 178110, 17M101, 17P11 Series (Ch. 547-1, 547-2)
ADDITIONAL SCHEMATIC PAGE
VHF TUNER 154-8A161-41 7
DENOTES CHASSIS GROUND
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt.
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE
© Howard W. Sams & Co., Inc. 1960
SYLVANIA MODELS 178110, 17M101, 17P11 Series (Ch. 547-1, 547-2)
FOLDER 2

TUBE PLACEMENT CHART

TOP VIEW





TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

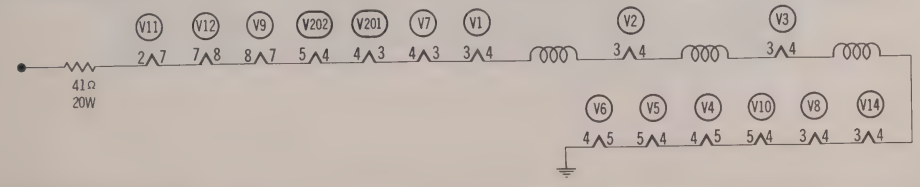
POWER SUPPLY FAILURE
No raster, no sound Fuse (Line), Rectifiers (B+), Fuse Wire (Line)

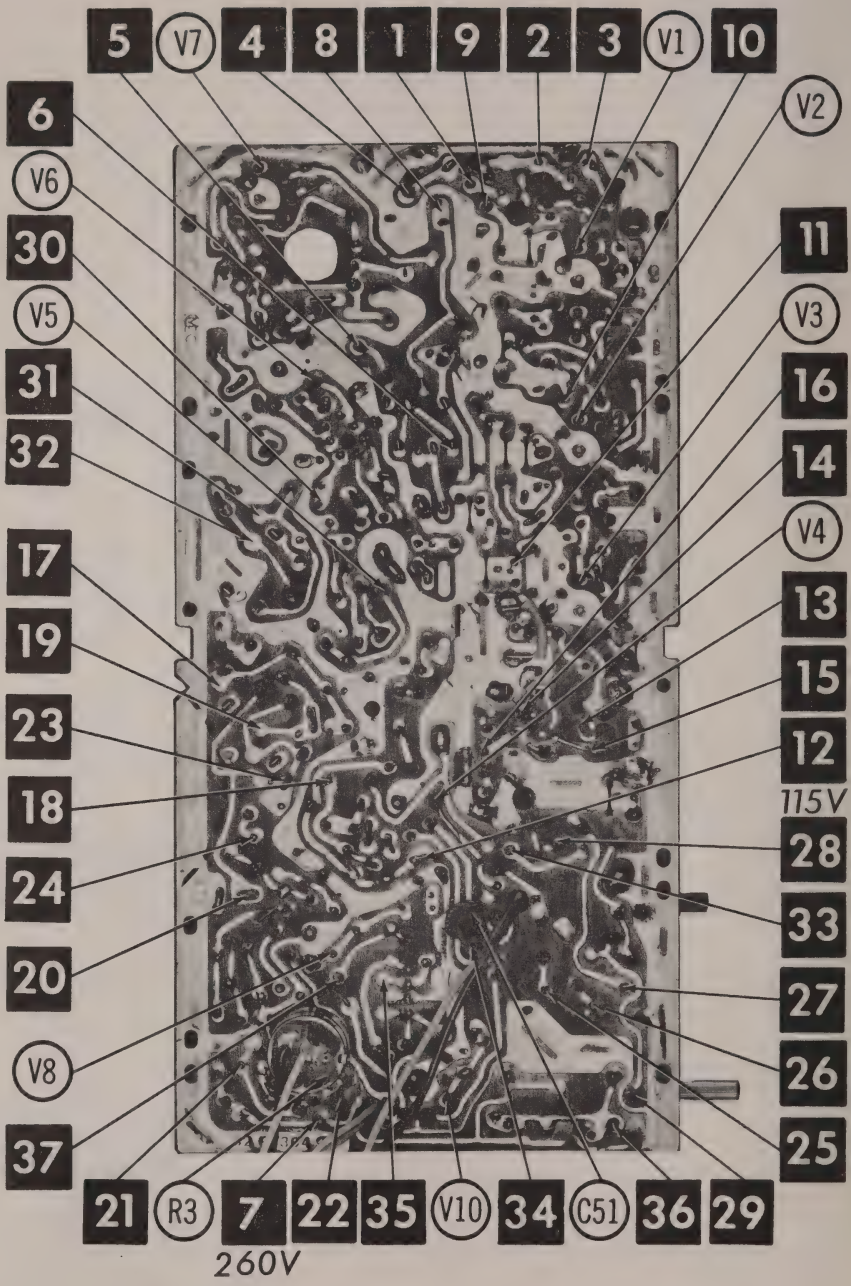
SWEEP FAILURE
No raster, has sound V10, V11, V12, V13, V14
No vertical deflection V9
Poor vert. linearity or foldover V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, Rectifier (B+)
Vert. off freq. V9
Horiz. off freq. V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no scund, has snow V201, V202, V1
No pic, has sound, has raster V4, V14
Has pic, no sound V5, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V8
No horiz. sync V4, V8
No vert. or horiz. sync V8

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)





A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 3.5 volt bias supply to point (A). Positive to chassis.
Connect the negative lead of a 25 volts bias supply to point (B). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Detune Mixer Plate Coil by turning core fully counterclockwise.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru 4700mmf disc ceramic capacitor to pin 1 (grid) of 1st Video IF. Low side to chassis.	44.0MC (10MC Swp)	42.6MC 45.75MC	Any non-interfering channel	Vert. Amp. to point (C). Low side to chassis.	A1, A2, A3	Adjust for response similar to Fig. 1. A1 controls tilt, A2 controls placement of 45.75MC marker and A3 controls placement of 42.6MC marker.
2.	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	"	47.25MC	"	"	A4, A5	Detune A5, then adjust A4 for maximum dip at marker. Adjust A5 for maximum dip at marker. (See Fig. 2).
3.	"	"	41.25MC	"	"	A6	Adjust for maximum dip at 41.25MC marker.
4.	"	"	42.6MC 45.75MC	"	"	Mixer Plate Coil, & A7	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. If necessary, retouch A1 and A3 SLIGHTLY for desired response.

4.5MC TRAP ALIGNMENT

Set Contrast control fully clockwise, and Brightness control fully counterclockwise.
Connect the negative lead of a 30 volt bias supply to point (A). Positive to chassis.
Connect a 4.5MC series tuned circuit between point (D) and chassis.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .001mfd to point (C). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	RF probe across coil of 4.5MC series tuned circuit	A8	Adjust for MINIMUM deflection.

ALTERNATE 4.5MC TRAP ALIGNMENT USING ON THE AIR SIGNAL

Tune in a strong TV signal and set Contrast at maximum. Adjust the Fine Tuning until a beat pattern is visible. Adjust A8 for MINIMUM beat interference.

SOUND IF ALIGNMENT

Connect two matched 100K (±1%) resistors in series from point (E) to chassis. The junction of these two resistors is alignment point (G) as shown on the schematic.
Connect the negative lead of a 30 volt bias supply to point (A). Positive to chassis.
Set Contrast control fully clockwise.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	High side thru .001mfd to point (C). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe thru 100K to point (E). Common to chassis.	A9, A10	Adjust for maximum deflection.
7.	"	"	"	DC probe to point (F). Common to point (G).	A11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

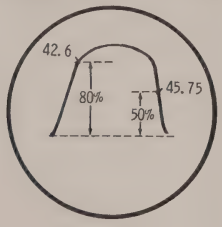


FIG. 1

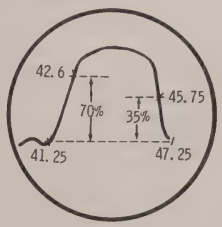


FIG. 2

TUNER ALIGNMENT INSTRUCTIONS

(54-84361-4)

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A212. . . . GENERAL CEMENT #5097, 8727
WALSCO #2515
A213 thru A215 . . . GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A217, A218 . . . . . GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Across VHF antenna terminals with 120Ω in each lead.	213MC	215.75MC	13	Across Video Det. load with 10K in Vert. Amp. lead.	A201	Adjust to place marker in trap notch as in Fig. 201.
		207MC	209.75MC	12		A202	
		201MC	203.75MC	11		A203	
		195MC	197.75MC	10		A204	
		189MC	191.75MC	9		A205	
		183MC	185.75MC	8		A206	
		177MC	179.75MC	7		A207	
		85MC	87.75MC	6		A208	
		79MC	81.75MC	5		A209	
		69MC	71.75MC	4		A210	
		63MC	65.75MC	3		A211	
		57MC	59.75MC	2		A212	

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Connect the negative lead of a 2.5 volt bias supply to point ⟨1⟩. Positive to chassis.
Use only enough sweep generator output to provide a usable pattern on scope.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Use 10MC sweep unless otherwise noted.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Across VHF antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K to point ⟨1⟩. Low side to chassis.	A213, A214, A215, A216	Adjust for maximum gain and symmetry of response similar to Fig. 202 with markers as shown. Adjust A213 for maximum gain, A214 and A215 for proper marker positions and A216 for proper bandwidth.
3.	"	177MC	175.25MC 179.75MC	7	"	A217, A218	Adjust for maximum gain and symmetry of response similar to Fig 202 with markers as shown. Repeat steps 2 and 3.
4.	"	"	"	"	"	A219	If dip in response curve exceeds 15%, adjust A219 but not to the extent that gain is lost.
5.	"	85MC	83.25MC 87.75MC	6	"	A220, A221, A222, A223	Adjust for maximum gain and symmetry of response similar to Fig. 202 with markers as shown. A220 is adjusted for maximum gain, A221 and A222 to position markers and A223 for proper bandwidth.
6.	"	79MC	77.25MC 81.75MC	5	"	A224, A225, A226	Adjust in numerical order for response similar to Fig. 202. First adjustment is for maximum gain and other two for correct marker placement.
7.	"	69MC	67.25MC 71.75MC	4	"	A227, A228, A229	"
8.	"	63MC	61.25MC 65.75MC	3	"	A230, A231, A232	"
9.	"	57MC	55.25MC 59.75MC	2	"	A233, A234, A235	"

FIG. 201

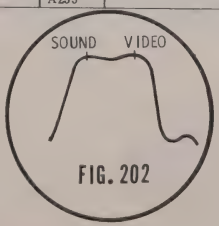
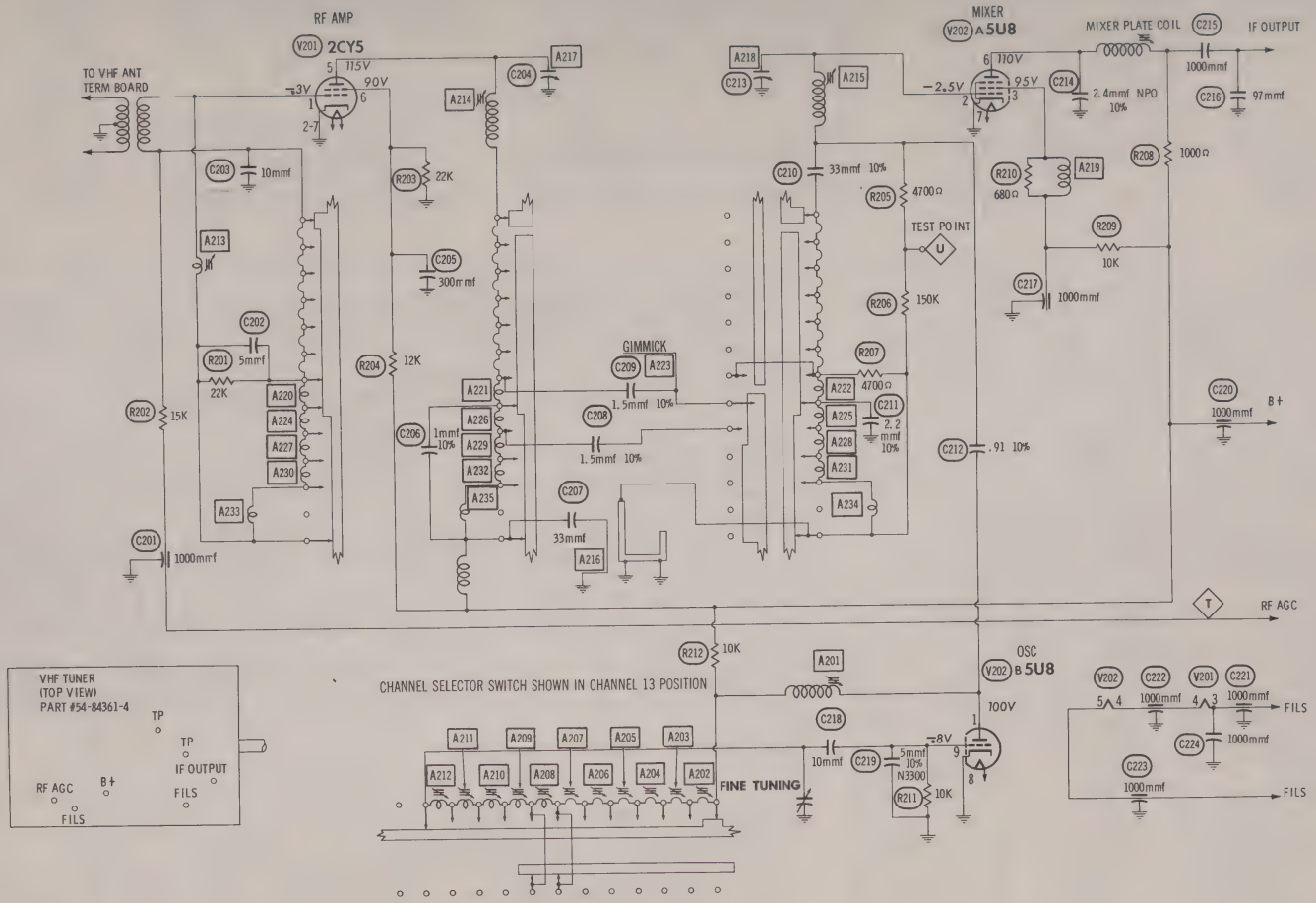


FIG. 202



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER (54-84361-4)

SYLVANIA MODELS 17B110, 17M101, 17P11 Series (Ch. 547-1, 547-2)

TUBES

ITEM No.	GENERAL ELECTRIC * TYPE	ITEM No.	RAYTHEON * SYLVANIA * TYPE
	USE		USE
V1	1st Video IF Amp.	3BZ6	V7 Audio Output	5AQ8
V2	2nd Video IF Amp.	3BZ6	V8 Sync Sep.- Noise Limiter	3C9S
V3	3rd Video IF Amp.	3BZ6	V9 Vert. Mult. - Vert. Output	10EC7
V4	Video Output - Horiz. AFC	6FT7	V10 Horiz. Mult.	6CU7
V5	Sound IF Amp. - AGC Keying	6BR8	V11 Horiz. Output	12DQ6A
V6	Ratio Det. - AF Amp.	6BN8	V12 Damper	1BA2/6T4
			V13 HV Rectifier	1G3GT/1B3GT

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	SYLVANIA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.		
V14	17BWP4		17BWP4 ①	17BWP4 ②		① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP	VOLT	REPLACEMENT DATA SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	150	300	181-1028	PRL-100	XA6315	WM27	TD-300-300	TVAS-1447 *	
C2A	150	300	PR6-300	PRL-150	(2) DC635	WQ402		TVAS-4580 *	
B	100	300			(2) BBR100-35				
C	30	300							
D	100	35							
C3	1	50	181-1067	PRB300	BBR3-50	TC302	TD-2-50	TVA-1301	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.22 100V		P388N-33		CUB2P33	1DP-3-334	GEM-30323	ETM-P23
C5	3.7 NPO ± .25mmf		NPO-DI 3.0		CD3C			10TCC-V37
C6	3.7 NPO ± .25mmf	Note 1	NPO-DI 3.0		CD3C			10TCC-V37
C7	4.7 NPO ± .25mmf		NPO-DI 4.7	DTZ-4R7	C104C	CCTO-4R7	CMO-547	10TCC-V47
C8	5.6 ± 10%		NPO-DI 5.6	DTZ-5R6	CD5FBC	CCTO-5R6	CMO-556	10TCC-V56
C9	39 NPO		NPO-DI 39	TCZ-39	CD3QBC	CCTO-390	CMO-539	10TCC-Q39
C10	33 100V		P388N-33		CUB3P33	1DP-3-334	GEM-30323	ETM-P33
C11	1000		BPD-001	BD-103	BYA10C1	CCD-102	B-S10	S4EK-D10
C13	.15 200V		P388N-15		CUB3P15	3DP-3-154	GEM-30315	ETM-P15
C14	510 10%			BD-511	2BS2Y51	CCD-501	GP360	10TS-T50
C15	1000		BPD-001	BD-102	BYA10C1	CCD-102	B-S10	S4EK-D10
C16	1000		BPD-001	BD-102	BYA10C1	CCD-102	B-S10	S4EK-D10
C17	330 10%			BD-331	1JF331	CCD333	10TS-T33	10TS-T33
C18	1000		BPD-001	BD-102	BYA10C1	CCD-101	B-S10	S4EK-D10
C19	68 N220 5%							10TCH-Q68
C20	1000		BPD-001	BD-501	5BS2T0	CCD-501	GP360	10TS-T50
C21	1000		BPD-001	BD-102	BYA10C1	CCD-102	B-S10	S4EK-D10
C22	10000		BPD-01	BD-103	BYA10E1	CCD-103	B-S10	S4EK-S10
C23	270	N1500 10%						
C24	5.6 NPO ± .5%		NPO-DI 10	DTZ-10	CD5QC	CCTO-100	CMO-410	10TCC-V56
C25	10 NPO 10%		NPO-DI 10	DTZ-10	CD5QC	CCTO-100	CMO-410	10TCC-Q10
C26	10 NPO 10%		NPO-DI 10	DTZ-10	CD5QC	CCTO-100	CMO-410	10TCC-Q10
C27	.05 300V 10%		V94C3S5-105	DD-153	P5S4S5	4DP-1-053	GEM-4115	4TM-S05
C28	.33 400V		P415N-33		BCSP33	4DP-3-334	ACE6Q33	4SE-P33
C29	.18 N750 10%		N750-DI 30	TCN-18	CD5QBC		CMT-418	10TCC-Q18
C30	.18 400V		N750-DI 30	TCS-18	CD5QBC	CCTO-180	CMO-418	10TCC-Q18
C31	.22 400V		P415N-33		BCSP33	4DP-3-334	ACE6Q33	4SE-P33
C32	.0068 400V		P488N-0068	D5-682	CD5DD68	CM-1SB-682K	GEM-6268	ETM-D68
C33	.001 1000V 10%				DPMDS1K	1EDP-1-103	GEM-1431	10TM-D10
C34	.001 1000V				CUD3S2	1DP-3-103	GEM-1431	10TM-D10
C36	100 10%		1J89-001		2JB5T1	CM-1SB-101K	MCB-S35	MB-31
C37	.033 400V		BPD-0047		BYA10D47M	CCD-473	B-347	S4EK-D47
C38	4700		BPD-0047		BYA10D47M	CCD-472	B-347	S4EK-D47
C39	4700		BPD-001		BYA10C1	CCD-101	B-S10	S4EK-D10
C40	4700		BPD-0047		BYA10D47M	CCD-472	B-347	S4EK-D47
C41	10000		BPD-01		BYA10E1	CCD-103	B-S10	S4EK-S10
C42	3300		BPD-0033		BYA10D33	CCD-332	B-333	S4EK-D32
C43	.0033 600V 10%				DPMDH33	1EDP-1-303	GEM-41383	ETM-D3
C44	.01 400V		P488N-01		CUB4E1	4DP-1-103	GEM-411	4TM-S1
C45	.1 200V		P388N-1		CUB4E1	4DP-1-104	GEM-4111	4TM-P1
C46	.033 400V		P488N-033		BPD-033	4DP-3-333	GEM-4133	4TM-S33
C47	.005 600V 10%		V94C5S5-105		DD-152	DPMDS5K	GEM-4152	ETM-D5
C48	.0022 1000V 10%					DPMBS5D22	GEM-4122	10TM-D22
C49	.33 400V		P488N-33			P5AS733	GEM-4233	
C50	.047 400V		P488N-047		BPD-047	4DP-3-473	GEM-4147	4TM-S47
C51	.1 400V		P488N-1		DF-104	4DP-3-104	GEM-411	4TM-P1
C52	.0068 1600V 10%						GEM-41256	
C53	4700		BPD-0047		BYA10D47M	CCD-473	B-347	S4EK-D47
C54	.0047 400V 10%				P4ED47	5DP-1-472	GEM-41347	ETM-D47
C55	.47		V94C4D47-105	TCS-47	2JB5Q47	CM-1SB-470K	CMO-447	M6-447
C56	330 10%		1J89-00033		2JB5T33	CM-1SB-331K	CMO-433	M6-333
C57	.047 400V 10%		P488N-047	BD-503	CUB4E47	4DP-1-473	GEM-4147	4TM-S47
C58	.033 600V 10%		V94C5S3-105		P4ES33	5DP-1-333	GEM-41533	ETM-S33
C59	82 3000V NT50 10%	81S9-0081						
C60	.01 3000V 10%	81S9-0088						
C61	.1 400V		P488N-1		DF-104	CUB4Z1	4DP-3-104	GEM-401	4TM-P1
C62	1000		BPD-001		BPD-001	BYA10C1	CCD-103	B-S10	S4EK-D10
C63	1000		BPD-001		BPD-001	BYA10C1	CCD-103	B-S10	S4EK-D10
C64	1000		BPD-001		BPD-001	BYA10C1	CCD-102	B-S10	S4EK-D10
C65	1000		BPD-001		BPD-001	BYA10C1	CCD-102	B-S10	S4EK-D10
C66	1000		BPD-001		BPD-001	BYA10D1	CCD-102	B-S10	S4EK-D10
C67	1000		BPD-001		BPD-001	BYA10D1	CCD-102	B-S10	S4EK-D10
C68	1000		BPD-001		BPD-001	BYA10C1	CCD-102	B-S10	S4EK-D10
C69	1000		BPD-001		BPD-001	BYA10D1	CCD-102	B-S10	S4EK-D10
C70	.33 400V		P488N-33		BPD-033	CUB4Z3	4DP-3-334	GEM-4133	ETM-P33
C71	4700		BPD-0047		BPD-473	BYA10D47M	CCD-472	B-347	S4EK-D47

PARTS LIST AND DESCRIPTIONS

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C72	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-347	S4EK-D47

Note 1. May not be used in some versions. # Sylvania Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING	WATTS	REPLACEMENT DATA SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	25K		153-0135					Volume
R2	15K Tap @ 500Ω Stop		153-0160					Contrast
R3A	1meg		153-0063	S-69	A47-1meg-S	GII-137	U54	Brightness
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KN-1	SWZ-12	76-1	US-28	Power Off-On
R4	1meg		153-0130	TT-75 *	B47-1meg-S*	61JC1 *	PTA26L *	Vert. Linearity
	Hung Stop							
R5A	1meg		153-0134	TT-69	B47-1meg-S	BII-137	TA18L	Vert. Hold
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R6	5meg		153-0164	TT-67	B47-5meg-S	61JC5	PTA26L	Height
R7A	50K		153-0138	TT-31	B47-50K-S	BII-123	PTA24L	Horiz. Size (Width)
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R8	190K		153-0158					AGC

* Use 100K resistor in series with right hand terminal, viewed shaft end terminals down.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R19	5.6meg	
R20	6.8meg	
R21	470K	
R22	47000	
R23	1000	
R24	3400	
R25	2300	
R26	100K	
R27	330K	
R28	15K	
R29	100K	
R30	330K	
R31	15K	
R32	6.8meg	
R33	1.5meg	
R34	56K 1W	
R35	3300	
R36	27K	
R37	330Ω	
R38	470K	
R39	15K	
R40	150K	
R41	56K	
R42	100K	
R43	18K	
R44	18K	
R45	100K	
R46	47K	
R47	10K 2W	
R48	10K 1W	
R49	68K	
R50	22K	
R51	33K	
R52	22K	
R53	6.8meg	
R54	2.2meg	

ITEM No.	RATING	REMARKS
R55	1.5meg	
R56	470K	
R57	680K	
R58	100K (Cold)	R58-0081
R59	33K	
R60	12K 1W	
R61	1meg	
R62	100K 2W	
R63	3200Ω	
R64	56K	
R65	10K 1W	
R66	100K	
R67	47K	56K *
R68	220Ω	
R69	330K	
R70	10K 2W	
R71	10K	
R72	4700Ω	
R73	4700Ω	
R74	3400Ω 10W	R59-0085
R75	4.7Ω 5W	R87-0034
R76	6ΩΩ 20W	R87-0067
R77	47K	

Sylvania Part Number. * Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA SYLVANIA PART No.	Merit PART No.	Miller PART No.	Rem PART No.	NOTES
L1	IF Input Matching Coil	119-0025				
L2	47.25MC Trap	119-0098	TV-153 *	6238 *		
L3	41.25MC Trap	120-0037	TV-131 *	6238 *	VF-4 *	
L4A	1st Video IF	119-0037	TV-134 *	6213 *		
B	47.25MC Trap					
L5	2nd Video IF	119-0038	TV-130 *	6213 *	VF-3 *	
L6	3rd Video IF	119-0038	TV-130 *	6213 *	VF-3 *	
L7	RF Choke	118-0032	BC-561	4602	VF-9	
L8	4th Video IF	119-0036	TV-131 *	6238 *	VF-4 *	
L9	RF Choke	118-0030	BC-563	4604	VF-9	1.5uh
L10	RF Choke	118-0030	BC-562	4604	VF-9	1.5uh
L11	Series Peaking Coil	131-3098	TV-183	6178	VF-5	88uh
L12A	4.5MC Trap	120-0033				
B	Sound Takeoff					
L13	Series Peaking Coil	131-3037	TV-101	6134	VF-7	388uh
L14	Ratio Detector	127-0002				
L15	RF Choke	118-0001	BC-566	6613		10uh
L16	Fil. Choke	118-0032	BC-561	4602	VF-9	1.5uh
L17	Fil. Choke	118-0031	BC-561	4603	VF-9	1.2uh
L18	Fil. Choke	118-0032	BC-561	4603	VF-9	1.5uh

* Fabricate mounting. ▲ Disregard Secondary.

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA SYLVANIA PART No.	Merit PART No.	Miller PART No.	Rem PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L19	Horiz. Stabilizer	132-0019	TV-163	6210	H-102	RTC-8632	S9-4	WLC-3

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	DC RES. @ CURRENT	INDUCTANCE @ CURRENT 1000 ~(a)	REPLACEMENT DATA SYLVANIA PART No.	Merit PART No.	Rem PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L20	.260A	25Ω	.9 Hy.	141-0020			C-2343		C-34X	

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA SYLVANIA PART No.	Merit PART No.	Rem PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	Vert. Output	241-0047	A-3015 (1-2)	V304 ①		VO-102 ③	26S5 ③	A-12AX
T2	Yoke Horiz. (33MH)	100-0036	MDP-110				Y-66 ④ ⑤	Y-66 & NW2 ⑤
	DPP Vert. (30MH)		④ ⑤					
	Rear Cover and Centering Device	400-0039						
	Yoke Clamp	487-0078						
T3	Horiz. Output	241-0048				HO-130		

① Use 6 to 1 Turns Ratio. ③ Drill new mounting hole(s).
② Connect as autotransformer. ④ Requires new rear cover and centering device.
③ Connect yoke terminal #6 to Horizontal Output Terminal #6; connect yoke terminals #2 and #6 to Horizontal Output Terminal #1; yoke terminal #4 to Horizontal Output Terminal C.
④ Remove orange lead from yoke terminal #6. Connect yoke terminal #3 to Horizontal Output Terminal #6; connect yoke terminals #3 and #5 to Horizontal Output Terminal #1; yoke terminal #7 to Horizontal Output Terminal C.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA SYLVANIA PART No.	Merit PART No.	Rem PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	7000Ω	3-40	142-0060	A-3026		34S68	S-48X	

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA SYLVANIA PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	539-3420	4A2	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SYLVANIA PART No.	REPLACEMENT DATA
K2	Antenna Filter	470mmf, 3-lmeg	190-0095	Centralab RC-47
K2	Antenna Filter	470mmf, 3-lmeg	190-0095	Sprague ACC-1
K3	Vert. Retrace	3300mmf, 22K, 33K		
K4	Audio Coupling	400mmf, 5800mmf, 10000mmf, 470K, 470K, 1meg	190-0058 ②	
K5	Sync Sep. Grid	1000mmf, 1000mmf, 330K, 1meg	190-0043 ②	
K6	Horiz. AFC Comp.	82mmf, 100mmf, 1000mmf, 1000mmf, 4700mmf, .047mfd, 2700Ω, 47K, 820K, 1meg, 1meg	190-0049	
IC1	Horiz. Mult. Plate	680mmf, 1000mmf, 4700mmf, 2700Ω, 120K	190-0050 ①	

① Alternate Part #190-0058, with item (#32-95727-1) or (#32-96186-1) ② Item (#32-83098-2) or (#32-91133-2).
③ Item (#32-96184-1) or (#32-96187-1). ④ Item (#32-89683-1) or (#32-99701-1).

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	SYLVANIA PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.340A	517-0027 *	1N1764 *	T-350 *	350A *	8H500 *	* Silicon
M3	.260A	517-0027 *	1N1764 *	T-350 *	350A *	8H500 *	* Selenium

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA SYLVANIA PART No.	LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3	C	3½ 250V	1R-0022	342-001	312001 IEC 21A 250V)	346006	C 3½	IEC 1 3/4 to 3½
M4	1½" length of #26 wire							

CRYSTAL DIODES

ITEM No.	TYPE	CARC PART No.	REPLACEMENT DATA SYLVANIA PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M5	1N295		1N295	1N295	1N295	1N295	Video Detector

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M6	Tuner		YHF (54-84361-4)
M7	Antenna	27-95177-1	JFD REPLACEMENT Type #TA-397

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass & Mask	71S-0030	Model 17P1U, 17H10
Safety Glass & Mask	71S-0036	Model 17H10M
Knob	74S-0120	Channel Selector, Spring & Dial Assembly, (VHF/UHF) Model 17P1UWU
Knob	74S-0121	Channel Selector, Spring & Dial Assembly, (VHF/UHF) Model 17P1UTU

PARTS LIST AND DESCRIPTIONS (Continued)

CABINETS & CABINET PARTS (cont)

NAME	PART NO.	DESCRIPTION
Knob	743-0112	Channel Selector, Spring & Dial Assembly, (VHF/UHF) Model 17P11RU
Knob	743-0107	Channel Selector, Spring & Dial Assembly, (VHF Only) Model 17P11W
Knob	743-0108	Channel Selector, Spring & Dial Assembly, (VHF Only) Model 17P11T
Knob	743-0109	Channel Selector, Spring & Dial Assembly, (VHF Only) Model 17P11R
Knob	743-0083	Channel Selector, Spring & Dial Assembly, (VHF Only) Model 17B110
Knob	743-0104	Channel Selector, Spring & Dial Assembly, (VHF Only) Model 17M101
Knob	743-0082	Channel Selector, Spring & Dial Assembly, (UHF/VHF) Model 17B110
Knob	740-0301	Fine Tuning VHF, (VHF/UHF) Models 17P11, 17B110
Knob	740-0199	Fine Tuning VHF, (VHF Only) Models 17P11, 17M101
Knob	740-0330	Fine Tuning VHF, (VHF Only) Model 17B110
Knob	740-0348	On-Off,Volume, Contrast, Brightness, Models 17P11W, 17P11WU
Knob	740-0349	On-Off,Volume, Contrast, Brightness, Models 17P11T, 17P11TU
Knob	740-0359	Volume Contrast, Models 17P11R, 17P11RU
Knob	740-0268	On-Off,Volume, Contrast, Brightness, Model 17B110
Knob	740-0359	On-Off,Volume, Contrast, Brightness, Model 17M101
Knob	740-0350	On-Off, Brightness, Models 17P11R, 17P11RU
Knob	740-0217	Fine Tuning UHF, Models 17P11, 17B110
Handle	818-0218	Carrying, Model 17B110
Handle	818-0303	Carrying, Plastic, Models 17P11W, 17P11WU
Handle	818-0304	Carrying, Plastic, Models 17P11T, 17P11TU
Handle	818-0205	Carrying, Plastic, Models 17P11R, 17P11RU
Handle	818-0306	Rod, Model 17P11

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

TUNER PARTS LIST AND DESCRIPTIONS

54-84361-4

TUBES

◆ GENERAL ELECTRIC ◆			◆ RAYTHEON ◆ SYLVANIA ◆		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amplifier	2CY5	V202	Mixer - Osc.	5U8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	1000		EF-001	MFT-1000		CCF-102	CT280A	
C202	5		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C203	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C204								
C205	300		DI-300	DD-301	L10T30	CCD-301	GP330	10TS-T30
C206	1 10%		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C207	33		DI-33	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C208	1.5 10%		NPO-SI 1.5	TCZ-1R5	C10V15C		CNO-515	10TCC-V15
C209	1.5 10%		NPO-SI 1.5	TCZ-1R5	C10V15C		CNO-515	10TCC-V15
C210	33 10%		DI-33	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C211	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C212	.91 10%							
C213								
C214	2.4 NPO 10%							10TCC-V27
C215	1000		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C216	97		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C217	1000		EF-001	MFT-1000		CCF-102	CT280A	
C218	10		DI-10	DD-100	L10Q1	CCD-100		10TS-Q10
C219	5 N3300 10%					*		
C220	1000		EF-001	MFT-1000		CCF-102	CT280A	
C221	1000		EF-001	MFT-1000		CCF-102	CT280A	
C222	1000		EF-001	MFT-1000		CCF-102	CT280A	
C223	1000		EF-001	MFT-1000		CCF-102	CT280A	
C224	1000		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

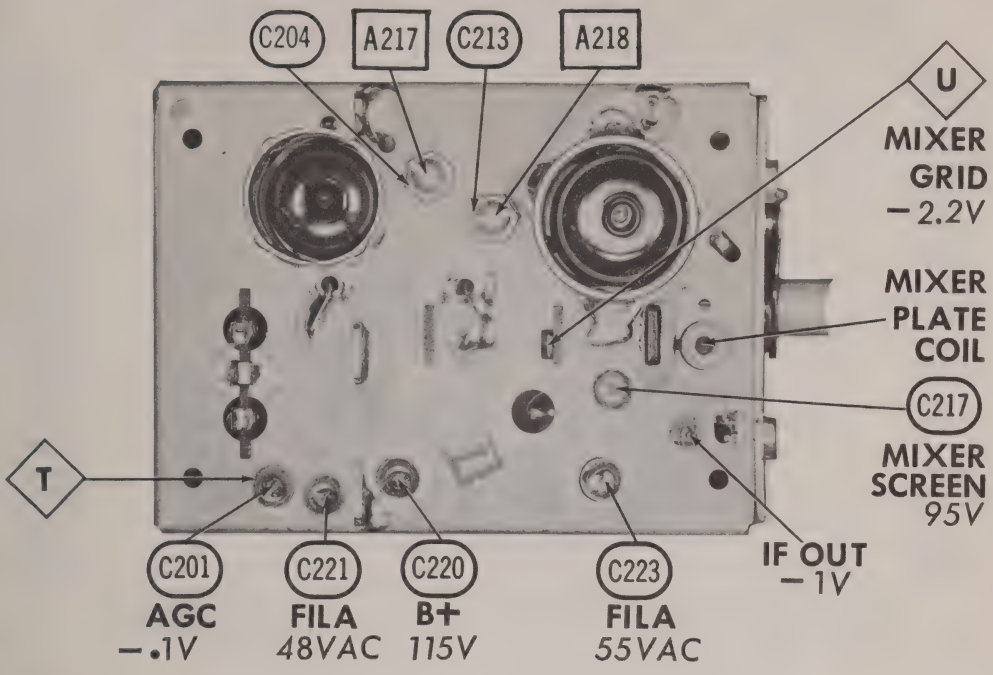
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

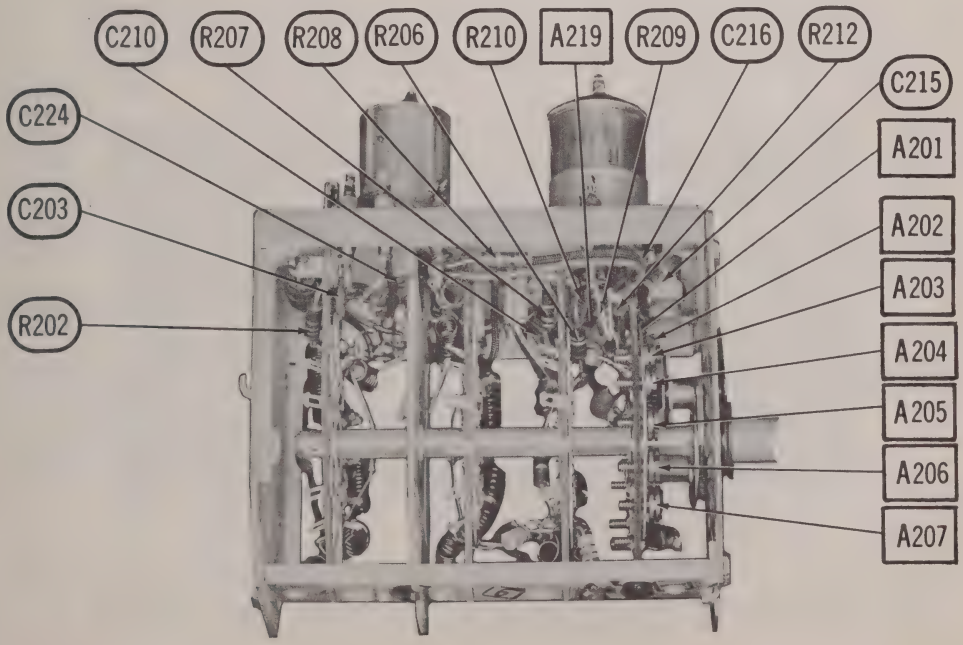
ITEM No.	RATING	REMARKS
R201	22K	
R202	15K	
R203	22K	
R204	12K	

ITEM No.	RATING	REMARKS
R205	4700Ω	
R206	150K	
R207	4700Ω	
R208	1000Ω	

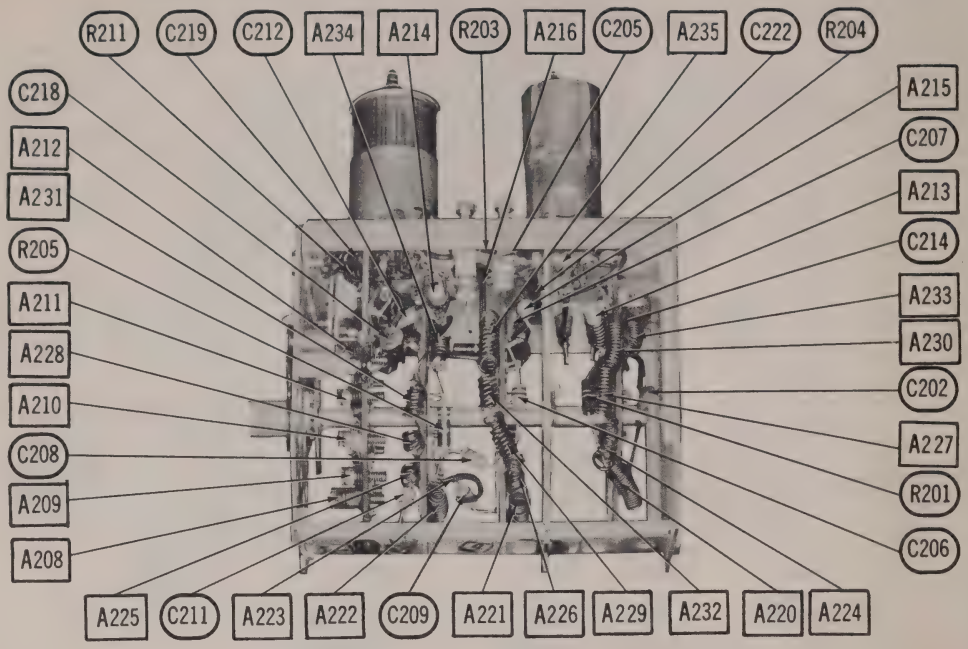
ITEM No.	RATING	REMARKS
R209	10K	
R210	680Ω	
R211	10K	
R212	10K	



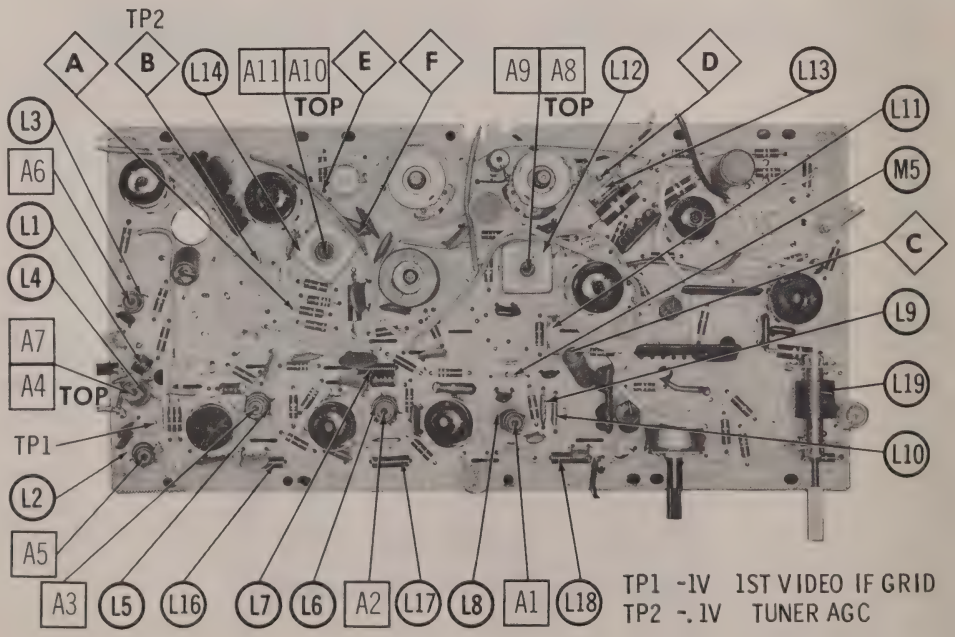
VHF TUNER (54-84361-4) - TOP VIEW



VHF TUNER (54-84361-4) - LEFT SIDE



VHF TUNER (54-84361-4) - RIGHT SIDE



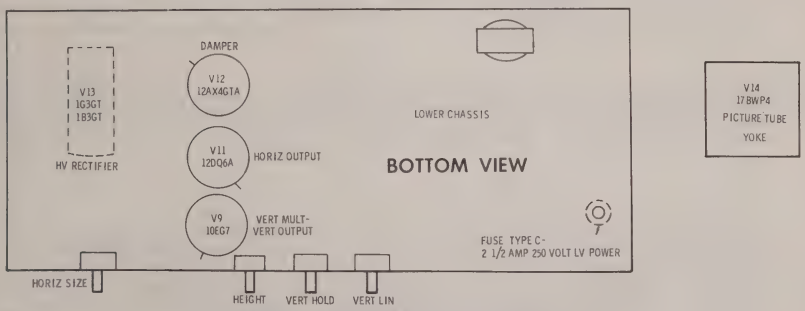
PRINTED BOARD - ALIGNMENT, INDUCTOR, & MISC. IDENT.

RESISTANCE MEASUREMENTS

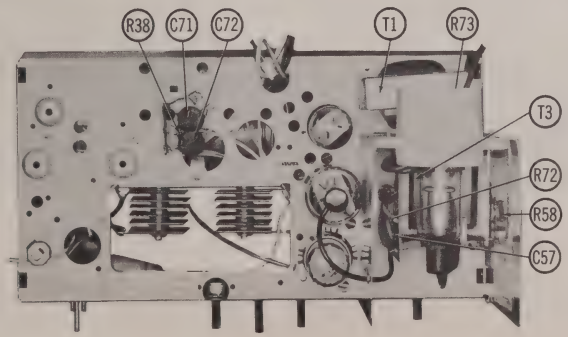
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	320K	240Ω	50Ω	45Ω	▪ 100Ω	▪ 100Ω	0Ω		
V2	3BZ6	47K	▪ 39Ω	45Ω	40Ω	† 28Ω	† 28Ω	INF		
V3	3BZ6	0Ω	180Ω	40Ω	35Ω	† 5000Ω	† 5000Ω	0Ω		
V4	8ET7	1meg	1.8meg	2700Ω	10Ω	20Ω	27Ω	3300Ω	† 2400Ω	† 7000Ω
V5	5BR8	50K	320K	• 65K	10Ω	5Ω	† 56K	† 56K	220Ω	10K
V6	6BN8	INF	27K	INF	0Ω	5Ω	0Ω	† 470K	10meg	0Ω
V7	5AQ5	NC	330Ω	50Ω	55Ω	† 650Ω	† 2400Ω	470K		
V8	3CS6	† 1meg	0Ω	25Ω	30Ω	† 30K	† 8000Ω	1.3meg		
V9	10EG7	• 2meg	† 180Ω	330Ω	• 2.8meg	† 1.7meg	0Ω	70Ω	85Ω	
V10	6CG7	† 10K	2.8meg	1000Ω	25Ω	20Ω	† 47K	120K	1000Ω	0Ω
V11	12DQ6A	NC	115Ω	TP	† 10K	330K	TP	100Ω	0Ω	TOP CAP † 11Ω
V12	12AX4GTA	NC	NC	TP	NC	† 30Ω	TP	100Ω	85Ω	
V13	1G3GT 1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP † 275Ω
V14	17BWP4	NC	• 220K	30Ω	35Ω	18K	† 28Ω	† 28Ω	NC	
V201	2CY5	7meg	0Ω	55Ω	58Ω	† 2400Ω	† 12K	0Ω		
V202	5U8	† 12K	155K	† 12K	58Ω	70Ω	† 3400Ω	0Ω	0Ω	10K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
▪ MEASURED FROM PIN 7 OF V2.
† MEASURED FROM PIN 3 OF V12.
† MEASURED FROM OUTPUT OF M1.

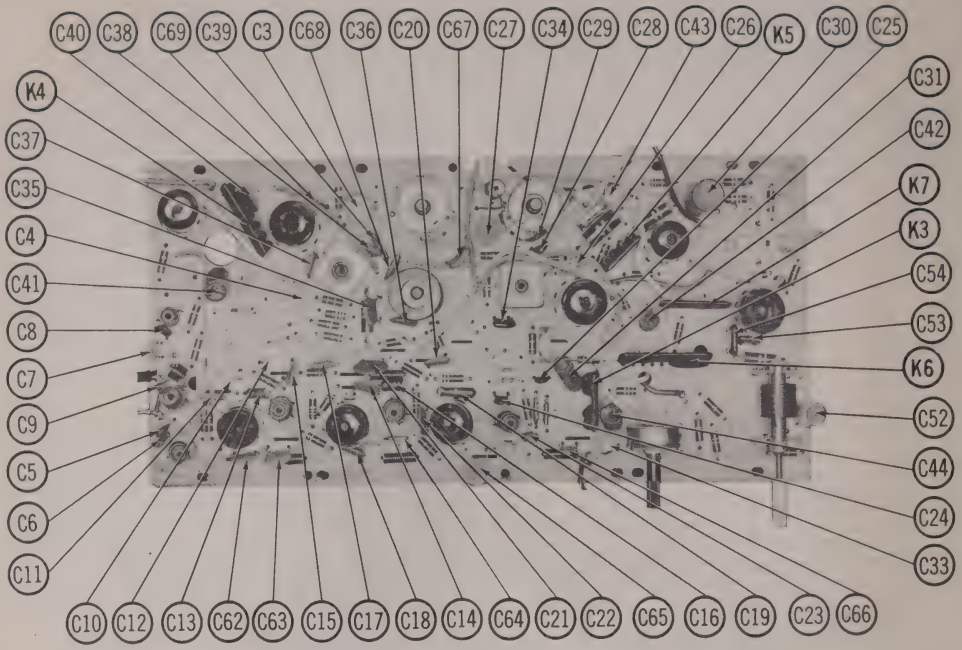
NC NO CONNECTION
TP TIE POINT



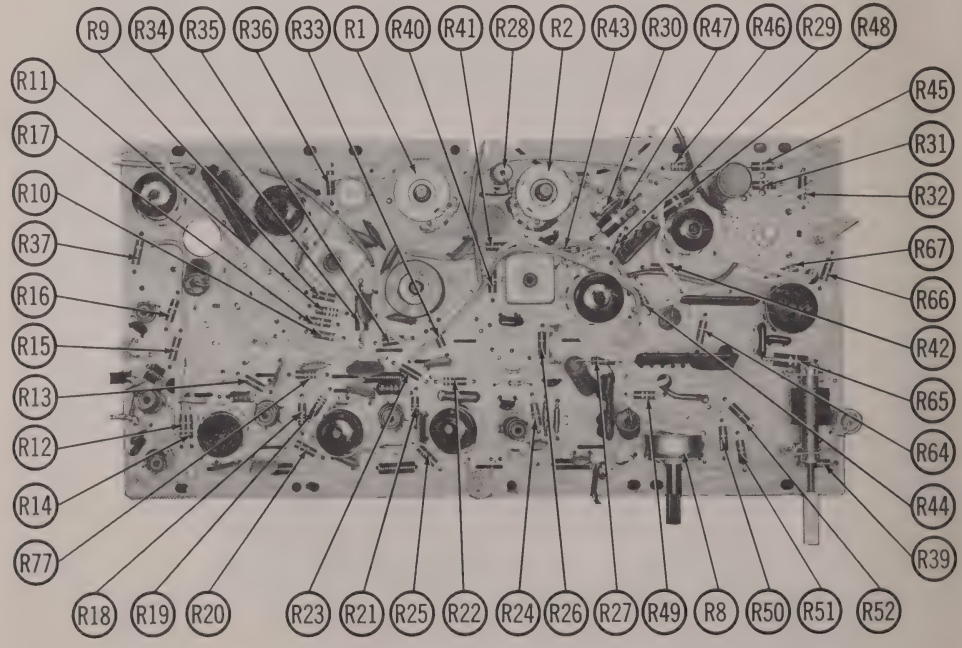
TUBE PLACEMENT CHART



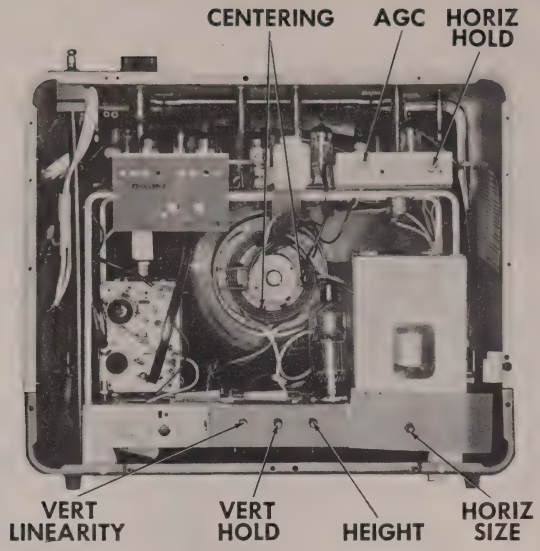
LOWER CHASSIS—TOP VIEW



PRINTED BOARD - CAPACITOR & MISC. IDENT.



PRINTED BOARD - RESISTOR IDENT.



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

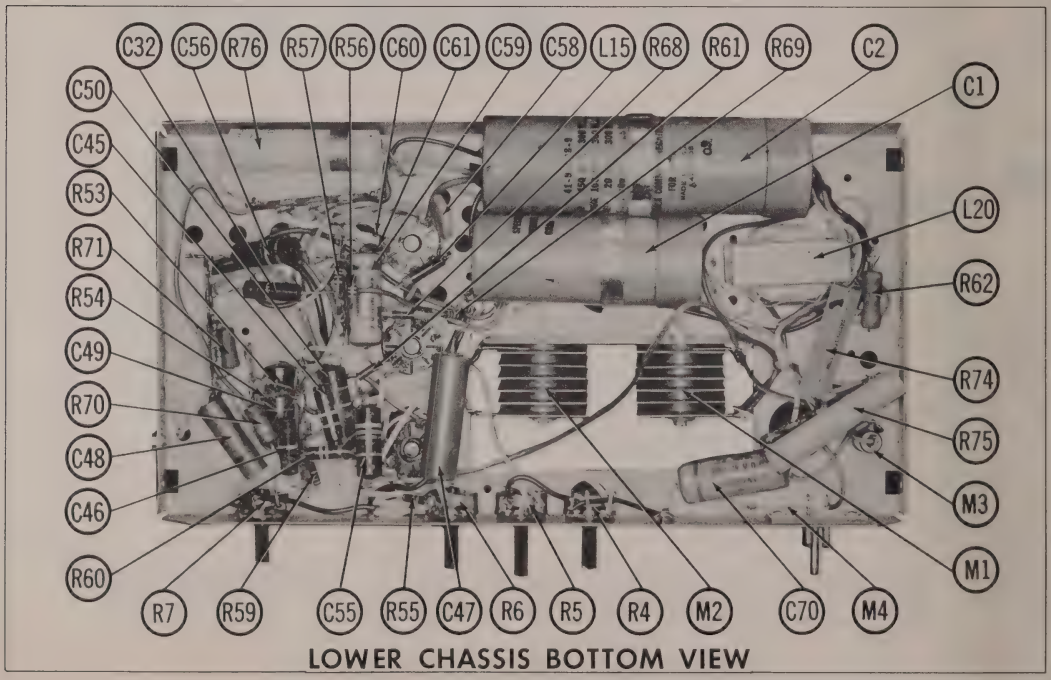
Turn the set on and tune in a TV station, preferably with a test pattern.

Set the Brightness and Contrast controls for a normal picture.

Turn the Horizontal Hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.

Adjust Width control for a picture SLIGHTLY larger than necessary to fill picture mask horizontally.



LOWER CHASSIS BOTTOM VIEW

PHOTOFACT® Folder

**PRODUCTION CHANGE
BULLETIN 244**

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 1 IN SET 466

PHILCO MODELS H4807L, M, W, UH4807L, M, W (CH. 10N41, U)

Philco Models H4254S, SL, H4674, L, W, H4676S, SL, H4678, W, H4680, L, W, H4682S, SL, SW, H4690, P, H4692W, H4696S, SW, UH4682S, SL, SW, UH4690, P, UH4692W, UH4696S, SW (Ch. 10L41, U) were covered in PHOTOFACT Folder 1 - Set 466.

Models H4807L, M, W, UH4807L, M, W (Ch. 10N41, U) are added along with late production changes with the publication of this bulletin.

Run 6

COMPONENT OMITTED

C18 is omitted; the lead from Circuitrace Point 8 to C18 is removed.

Run 7

TO IMPROVE SOUND SENSITIVITY

The Main Printed Circuit Panel is changed from a run 3 (orange dot) to a run 4 (yellow dot).

C28 is decreased from 8200mmf to 220mmf.

C29 is omitted.

R32 is decreased from 22K to 10K.

R33 is omitted.

R34 is decreased from 470Ω to 150Ω.

R47 is increased from 470K to 560K.

R48 is increased from 1.8meg to 2.2meg.

(Continued On The Reverse Side)

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 1 IN SET 479

PHILCO CHASSIS 10L31, U, 10L32, U

Philco Models H4248E, H4250, E, L, H4668, L, LR, R, H4670, L, W, H4672, L, W, H4673LR, R, UH4248E, UH4250, E, L, UH4253, L, UH4668, L, LR, R, UH4670, L, W, UH4672, L, W, UH4673LR, R (Ch. 10L31, U, 10L32, U) were covered in PHOTOFACT Folder 1 - Set 479

The following is a list of changes made during late production.

Run 6

TO IMPROVE SOUND SENSITIVITY

The Main Printed Circuit Panel is changed from a run 3 (orange dot) to a run 4 (yellow dot).

C26 is decreased from 8200Ω to 2200Ω.

C27 is omitted.

R30 is increased from 1.8meg to 2.2meg.

R40 is decreased from 22K to 10K.

R41 is omitted.

R42 is decreased from 470Ω to 150Ω.

Run 7

COMPONENT CHANGES

C24 is decreased from 4700mmf to 3900mmf.

R35 is increased from 56Ω to 68Ω.

The Main Circuit Panel is changed from a run 4 (yellow dot) to a run 5 (green dot).

PRODUCTION CHANGE
BULLETIN 244

PRODUCTION CHANGE
BULLETIN 244

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

Run 8	TO IMPROVE RANGE OF HEIGHT CONTROL The Main Printed Circuit Panel is changed from a run 4 (yellow dot) to a run 5 (green dot). R54 is increased from 1.5meg to 1.8meg. T3 (Vertical Output Transformer) is changed to Part #32-8940-1. PICTURE TUBE CHANGE Chassis 10N41, U use a Type 23CP4 picture tube.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Mask	54-5756-1	
Bezel	28-12972	Picture Tube
Knob	76-11142-19	Channel Selector, VHF
Knob	76-11142-21	Channel Selector, UHF
Knob	76-11142-20	UHF/VHF
Knob	76-11775-1	Fine Tuning
Knob	76-11627	Off-On Volume
Knob	76-11722-1	Contrast
Knob	54-6405-3	Brightness, Horizontal Hold, Tone, Vertical Hold

PHILCO MODELS H3046AQ, GL, GT, H3047GC, TC, WC, H3055BL, L, WL, UH3046AQ, GL, GT, UH3047GT, TC, WC, UH3052BL, L, WL (CH. 10H25, R, U)

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 484

Philco Models H3046AQ, GL, GT, H3047GC, TC, WC, H3055BL, L, WL, UH3046AQ, GL, GT, UH3047GT, TC, WC, UH3052BL, L, WL (Ch. 10H25, R, U) were covered in PHOTOFACT Folder 2 Set 484.

The following is a list of changes made during late production.

Run 2

PRINTED CIRCUIT PANEL CHANGE

The Sweep Circuit Printed Panel is changed from a run 1 (no color dot) to a run 2 (red dot).

COMPONENT CHANGES

R2A (Vertical Hold Control) is changed to Part #33-5592-55; the new vertical hold control is relocated in the circuit. The center of the control is wired to pin 6 of T2 (Deflection-Yoke). One side is left open; the other side of the control is wired to pin 7 of V8A (13DR7) thru a 220K $\frac{1}{2}$ watt resistor.

K3 is omitted.

A 68K 1 watt resistor is wired between pin 7 of V8A (13DR7) and C38.

C35 is omitted.

R44 is omitted.

A .0033mfd capacitor is added from pin 7 of V8A (13DR7) to ground.

Pin 8 of V8A (13DR7) is wired to ground.

Run4

TO IMPROVE RANGE OF HEIGHT CONTROL

The Sweep Circuit Printed Panel is changed from a run 2 (red dot) to a run 3 (orange dot).

R43 is increased from 1.5meg to 2.2meg.

RCA VICTOR MODELS VP-34HJ, JK, VP-36 (CH. RS-34P, RS-182)

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 13 IN SET 483

RCA Victor Models PF-26, PF-26D (Ch. RS-182) were covered in PHOTOFACT Folder 13 - Set 483.

Models VP-34HJ, VP-34JK, VP-36 (Ch. RS-34P, RS-182A) are added with the publication of this bulletin. These units are electrically similar except for the following changes.

CIRCUIT CHANGES

Ch. RS-34P

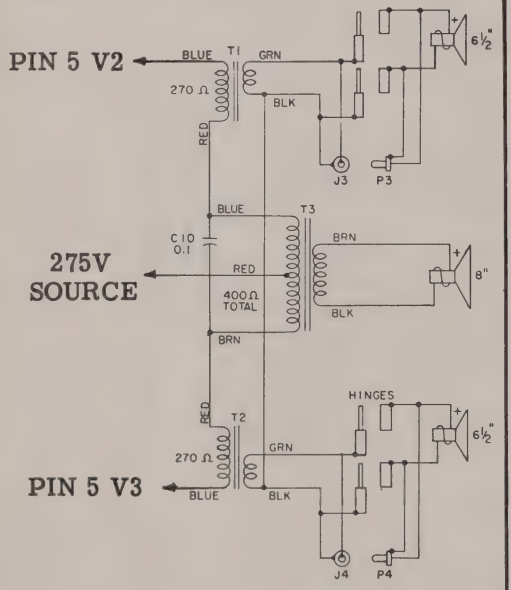
This chassis is similar to the one in PHOTOFACT Folder 13 - Set 483 except for the Output Circuit. A partial schematic diagram showing the Output Circuit is given in this bulletin.

Ch. RS-182A

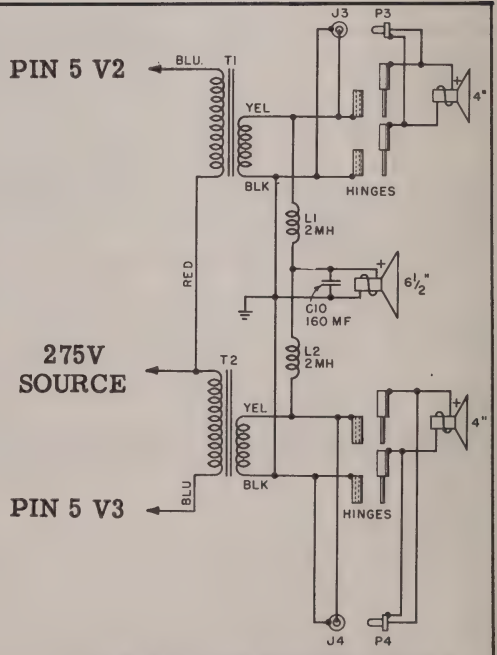
This chassis is similar to the one in PHOTOFACT Folder 13 - Set 483 except for the Output Circuit. A partial schematic diagram showing the Output Circuit is given in this bulletin.

For service information on Record Changers used in these units, see PHOTOFACT Folder 7 in Set 475.

(Continued On The Reverse Side)



RCA VICTOR MODELS VP-34HJ, JK



RCA VICTOR MODEL VP-36

Schematic Diagrams Courtesy of Radio Corporation of America

PHOTOFACT® Folder

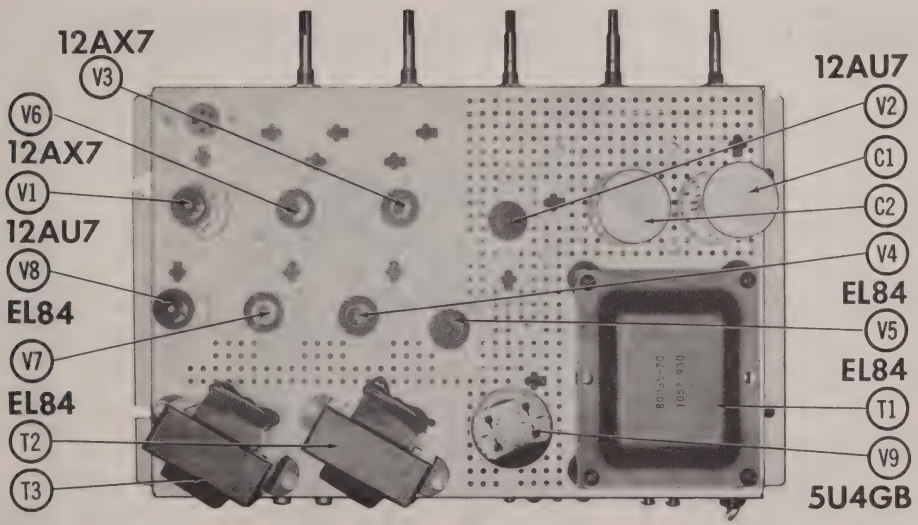
ADMIRAL MODELS SS1092, SS1093, SS1094, Y1092, Y1093, Y1094, Y1161, Y1162, Y1163 (Ch. 9H1)

ADMIRAL MODELS SS1092, SS1093, SS1094, Y1092, Y1093, Y1094, Y1161, Y1162, Y1163 (Ch. 9H1)

MODEL Y1161

TRADE NAME	Admiral Models Y1092, Y1093, Y1094, Y1161, Y1162, Y1163 (Ch. 9H1) SS1092, SS1093, SS1094 (Auxiliary Speaker Cabinet)
MANUFACTURER	Admiral Corp., 3800 Cortland Street, Chicago 47, Illinois
TYPE SET	AC Operated 9 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 125 Watts, 1.15 Amp. @117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER RC6G9M-18W OR RC6G9M-18X — SEE SIMILAR ADMIRAL RC607-1 — PHOTOFACT SET 398 FOLDER 7 OR RECORD CHANGER MANUAL RC-11



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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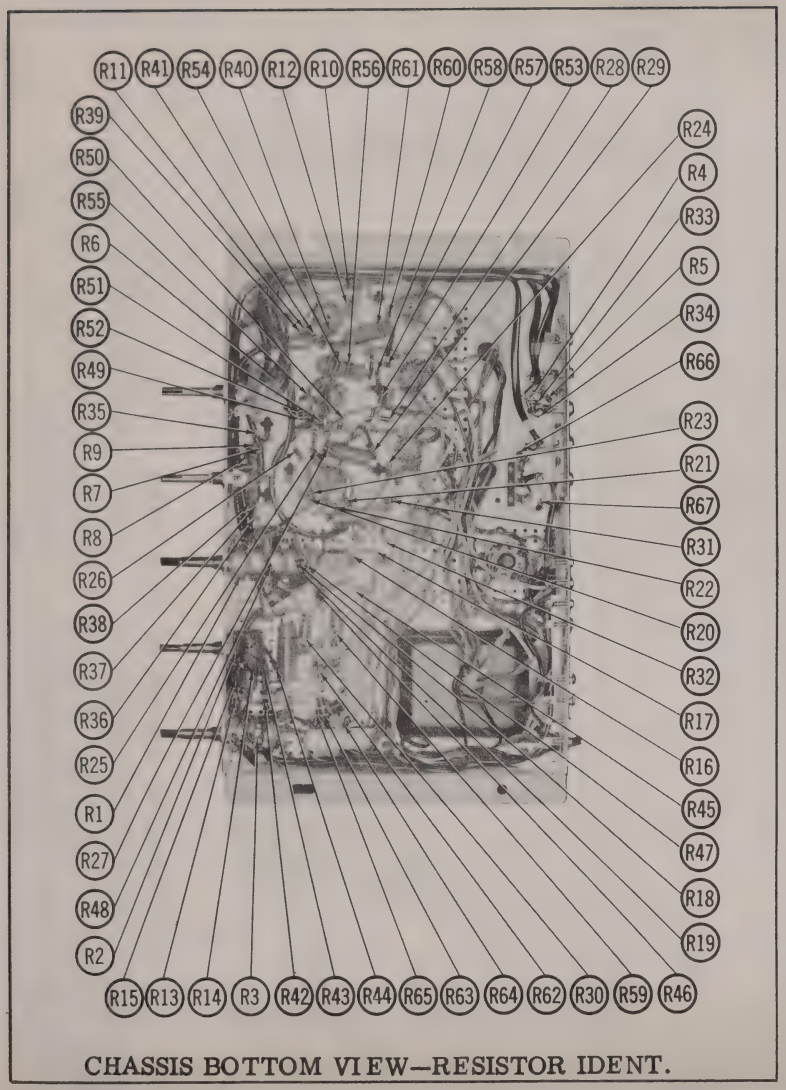
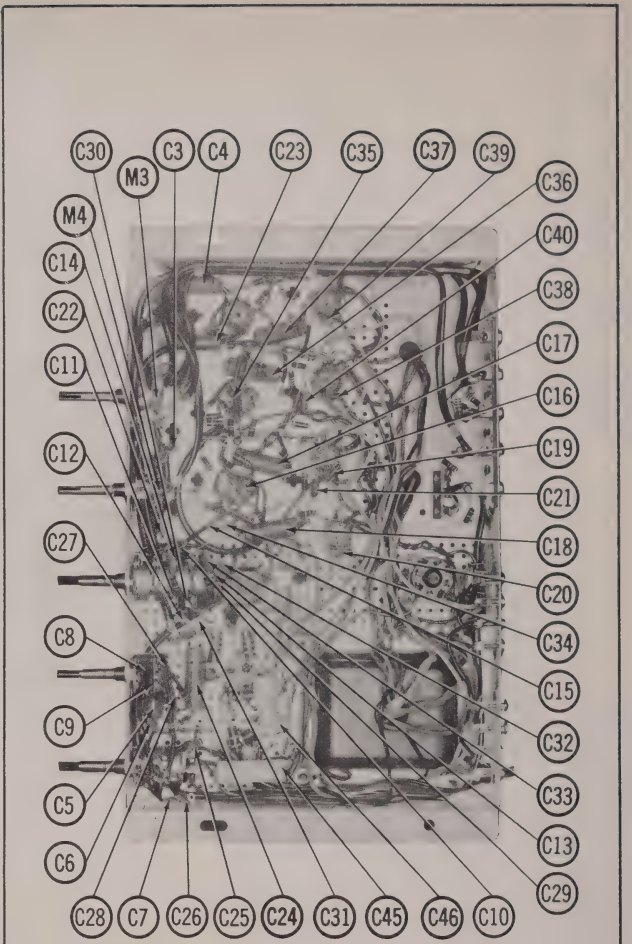
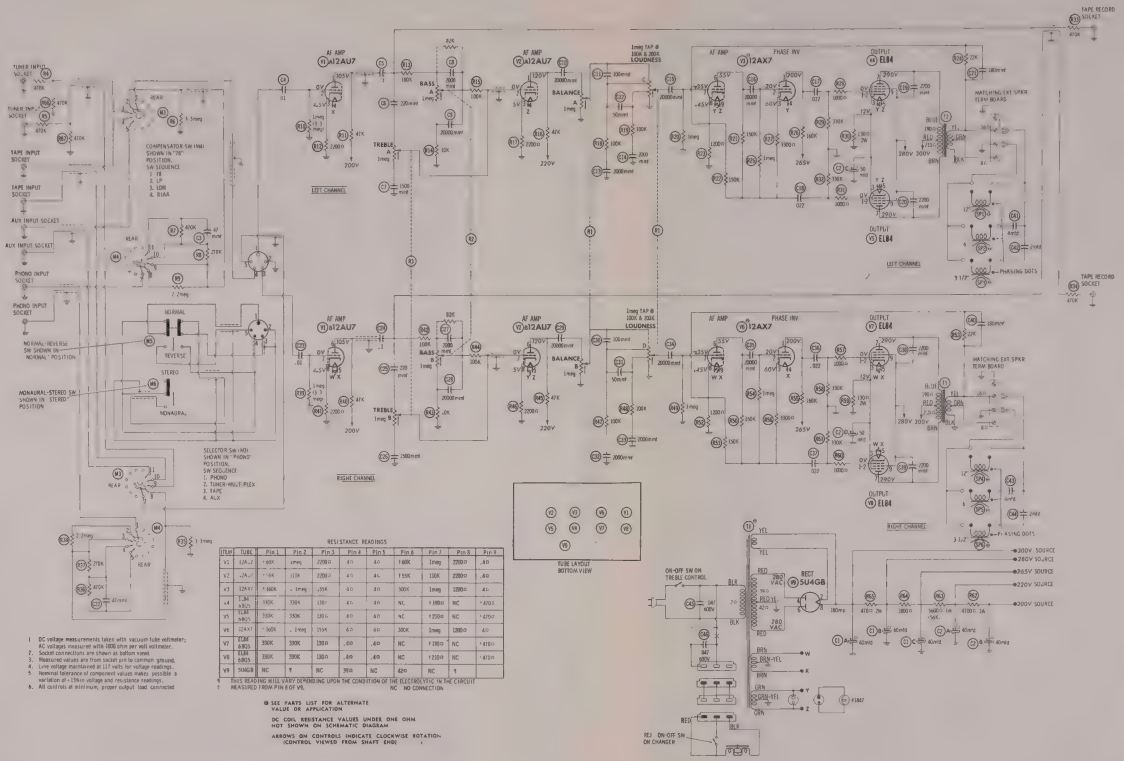
JT936



CHASSIS BOTTOM VIEW—RESISTOR IDENT.



CHASSIS BOTTOM VIEW
CAPACITOR & MISC. IDENT.



RESISTANCE READINGS

STAGE	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AU7	180K	1meg	270K‡	0	0	140K	1meg	270K‡	0
V2	12AX7	1MEG	150K	220K‡	0	0	135K	150K	220K‡	0
V3	12AX7	1 MEG	1 meg	270K	0	0	300K	1meg	270K‡	0
V4	EL84	180K	330K	130‡	0	0	NC	1 MEG	NC	470‡
V5	5U4GB	330K	330K	220‡	0	0	NC	1 MEG	NC	470‡
V6	12AX7	180K	1 meg	270K	0	0	300K	1meg	270K‡	0
V7	EL84	330K	330K	130‡	0	0	NC	1 MEG	NC	470‡
V8	EL84	330K	330K	130‡	0	0	NC	1 MEG	NC	470‡
V9	1N462B	NC	¶	NC	39‡	NC	42‡	NC	¶	

‡ Will READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT
† MEASURED FROM PIN 8 OF V8. NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected

◎ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION. CONTROL VIEWED FROM SHAFT END

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ADMIRAL MODELS SS1092, SS1093, SS1094, Y1092, Y1093, Y1094, Y1161, Y1162, Y1163 (Ch. 9H1)

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆)
V1	Left Channel AF Amp. - Right Channel AF Amp.	12AU7
V2	Left Channel AF Amp. - Right Channel AF Amp.	12AU7
V3	Left Channel AF Amp. - Phase Inverter	12AX7 Note 1
V4	Left Channel Output	EL84/6BQ5
V5	Left Channel Output	EL84/6BQ5
V6	Right Channel AF Amp. - Phase Inverter	12AX7 Note 1
V7	Right Channel Output	EL84/6BQ5
V8	Right Channel Output	EL84/6BQ5
V9	Rectifier	5U4GB

Note 1. Some versions may use 12AU7 in this application.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450	67D7-40	AFH3-45-25	C0365	FP375.6 TC75	TMT-193	TVL-3791	
B	■60	450							
C	▲40	350							
C2A	■40	350	67D7-39	AFH4-53	D0460	FP420.38	TMQ-58	TVL-4622.3	
B	▲40	350							
C	▲50	25							
D	50	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C4	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C5	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C6	220		SI 220	D6-221	L10T22	CCD-221	B-322	10TS-T22
C7	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C8	2000		BPD-002	DD-102	BYA10D2	CCD-202	B-220	5HK-D20
C9	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C10	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C11	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C12	50		SI 50	D6-500	L10Q50	CCD-500	GP450	10TS-Q50
C13	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C14	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C15	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C16	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C17	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C18	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C19	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C20	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C21	180		SI 180	D6-181	L10T18	CCD-181	B-318	10TS-T18
C22	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C23	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C24	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C25	220		SI 220	D6-221	L10T22	CCD-221	B-322	10TS-T22
C26	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C27	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C28	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C29	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C30	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C31	50		SI 50	D6-500	L10Q5	CCD-500	GP450	10TS-Q50
C32	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C33	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C34	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C35	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C36	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C37	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C38	2200		BPD-0022	DD-222	BYA10D2	CCD-222	B-222	5HK-D22
C39	2200		BPD-0022	DD-222	BYA10D2	CCD-222	B-222	5HK-D22
C40	180		SI 180	D6-181	L10T18	CCD-181	B-318	10TS-T18
C41	4mfd 10V		P1589Z-4.0					118P40502S2
C42	2mfd 10V		P1589Z-2.0		MP2W2			118P20502S2
C43	4mfd 10V		P1589Z-4.0					118P40502S2
C44	2mfd 10V		P1589Z-2.0		MP2W2			118P20502S2
C45	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C46	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	1/2	75C48-3					Balance, Left Channel
B	1meg	1/2						Balance, Right Channel
C	1meg *	1/2						Loudness, Left Channel
D	1meg *	1/2						Loudness, Right Channel
R2A	1meg	1/2	75D46-10 †					Bass, Left Channel
B	1meg	1/2						Bass, Right Channel
R3A	1meg	1/2	75D46-9 †					Treble, Left Channel
B	1meg	1/2						Treble, Right Channel
C	Switch							Power Off-On

† Control has "Clutch Action"; holding either shaft permits the other shaft to be turned; releasing the shaft permits both shafts to turn simultaneously.

* Taps @ 100K, 200K.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	470K	
R5	470K	
R6	3.3meg	
R7	470K	
R8	270K	
R9	2.2meg	
R10	1meg	(3.3meg) *
R11	47K	
R12	2200Ω	
R13	100K	
R14	10K	
R15	100K	
R16	47K	
R17	2200Ω	
R18	100K	
R19	100K	
R20	1meg	
R21	150K	
R22	150K	
R23	1200Ω	
R24	22K	
R25	1meg	

ITEM No.	RATING	REMARKS
R26	160K	
R27	3300Ω	
R28	1000Ω	
R29	330K	
R30	130Ω 2W	
R31	1000Ω	
R32	330K	
R33	470K	
R34	470K	
R35	3.3meg	
R36	470K	
R37	270K	
R38	2.2meg	
R39	1meg	(3.3meg) *
R40	47K	
R41	2200Ω	
R42	100K	
R43	10K	
R44	100K	
R45	47K	
R46	2200Ω	
R47	100K	

ITEM No.	RATING	REMARKS
R48	100K	
R49	1meg	
R50	150K	
R51	150K	
R52	1200Ω	
R53	22K	
R54	1meg	
R55	160K	
R56	3300Ω	
R57	1000Ω	
R58	330K	
R59	130Ω 2W	
R60	1000Ω	
R61	330K	
R62	4700Ω 1W	
R63	5600Ω 1W	(56K) *
R64	1800Ω	
R65	470Ω 2W	
R66	470K	
R67	470K	

* Alternate Value.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA: ADMIRAL PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
	PRI.	SEC. 1	SEC. 2							
T1	117V @ 1.15A	560 VCT @ .180A	5V @ 3A	80D35-20 ①						
	SEC. 3	SEC. 4	SEC. 5							
	6.3 VCT @ 2.1A	6.3 VCT @ 2.2A								

① Alternate Part #80C35-20

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA: ADMIRAL PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
	PRI.	SEC.							
T2	6700Ω CT	16Ω Tap @ 8Ω	79D56-15			A-3830			
T3	6700Ω CT	16Ω Tap @ 8Ω	79D56-15			A-3830			

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: ADMIRAL PART No.	QUAM PART No.	NOTES
SP1	12"	PM	14-16Ω	78C153-4 *	12A4AZ16	* Used in Models Y1161, Y1162, Y1163. Models Y1092, Y1093, Y1094 use SP1, SP2, SP3 only. ♦ Used with SP1 & SP2 in Models SS1092, SS1093, SS1094.
SP2	6"	PM	14-16Ω	78C162-1 *	6A3IZ16	
SP3	3½"	PM	6-8Ω	78C148-5 *	3A15TZ8	
SP4	12"	PM	14-16Ω	78C153-4 *	12A4AZ16	
SP5	6"	PM	14-16Ω	78C162-1 *	6A3IZ16	
SP6	3½"	PM	6-8Ω	78C148-5 *	3A15TZ8	
	3½"	PM	6-8Ω	78C148-6 ♦		

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: ADMIRAL PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M1	409C34-1-1 409B33-1-1 *	13TB		26S	S1-1 S3-3	53	J-43 & J-47X	8TA4-S	N-8TA-S

* Alternate Part Number.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA: ADMIRAL PART No.	JENSEN PART No.	REMARKS
M2	98C95-8 † or 98C95-9 ♦†	S-69X † or S-69XSD ♦†	† Jewel ♦ Diamond * Used with cartridge Part #409B33-1-1.
	*98C15-100 † or *98C15-102 ♦ and *98C15-101 †		

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M3	Switch	77B56-5	Function (Rotary Wafer)
M4	Switch	77B56-5	Compensator (Rotary Wafer)
M5	Switch	77C1-18	Normal-Reverse (DPDT, Slide Type)
M6	Switch	77C1-19	Stereo-Monaural (SPDT, Slide Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	20D34-1	Loudness, Bass, Treble, (Chrome), Right Channel
Knob	33C359-2	Balance, Bass, Treble, (Grey Plastic), Left Channel
Knob	700A208-1	Compensator, Function
Cabinet	35E549-1	Walnut, Model Y1161
Cabinet	35E549-2	Mahogany, Model Y1162
Cabinet	35E549-3	Blonde, Model Y1163
Cabinet	35E524-2	Mahogany, Model Y1092
Cabinet	35E524-3	Blonde, Model Y1093
Cabinet	35E524-4	Sierra, Model Y1094
Cabinet	35E525-2	Speaker, Mahogany, Model SS1092
Cabinet	35E525-3	Speaker, Blonde, Model SS1093
Cabinet	35E525-4	Speaker, Sierra, Model SS1094
Handle	37A211-1	Door (Brass) Models Y1161, Y1162, Y1163

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

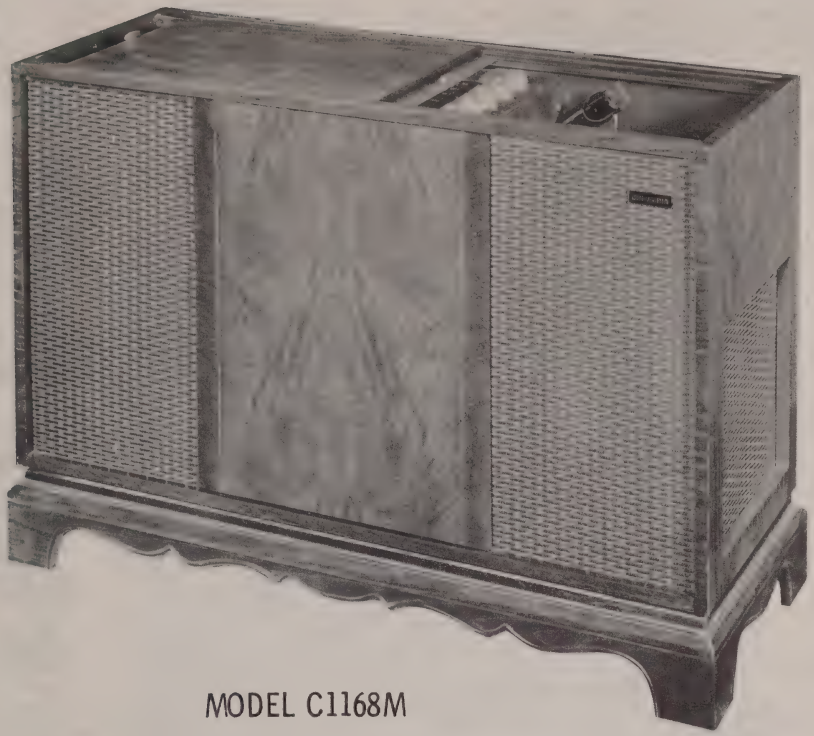
Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE®

COLUMBIA MODELS
C1168C, M, W

COLUMBIA MODELS
C1168C, M, W



MODEL C1168M

COLUMBIA MODELS
C1168C, M, W

TRADE NAME	Columbia Models C1168C, C1168M, C1168W		
MANUFACTURER	CBS Electronics, 100 Endicott Street, Danvers, Mass.		
TYPE SET	AC Operated 8 Tube FM-AM Tuner, 7 Tube Stereo Amplifier, And 4 Speed Automatic Record Changer		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING	135 Watts, 1.2 Amp. @117 Volts AC (Radio)
TUNING RANGE—BROADCAST	540 — 1620KC	FREQ. MOD.	88 — 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE SIMILAR COLLARO TC-340-E CONQUEST (REVISED) — PHOTOFACT SET 408 FOLDER 6 OR RECORD CHANGER MANUAL RC-11

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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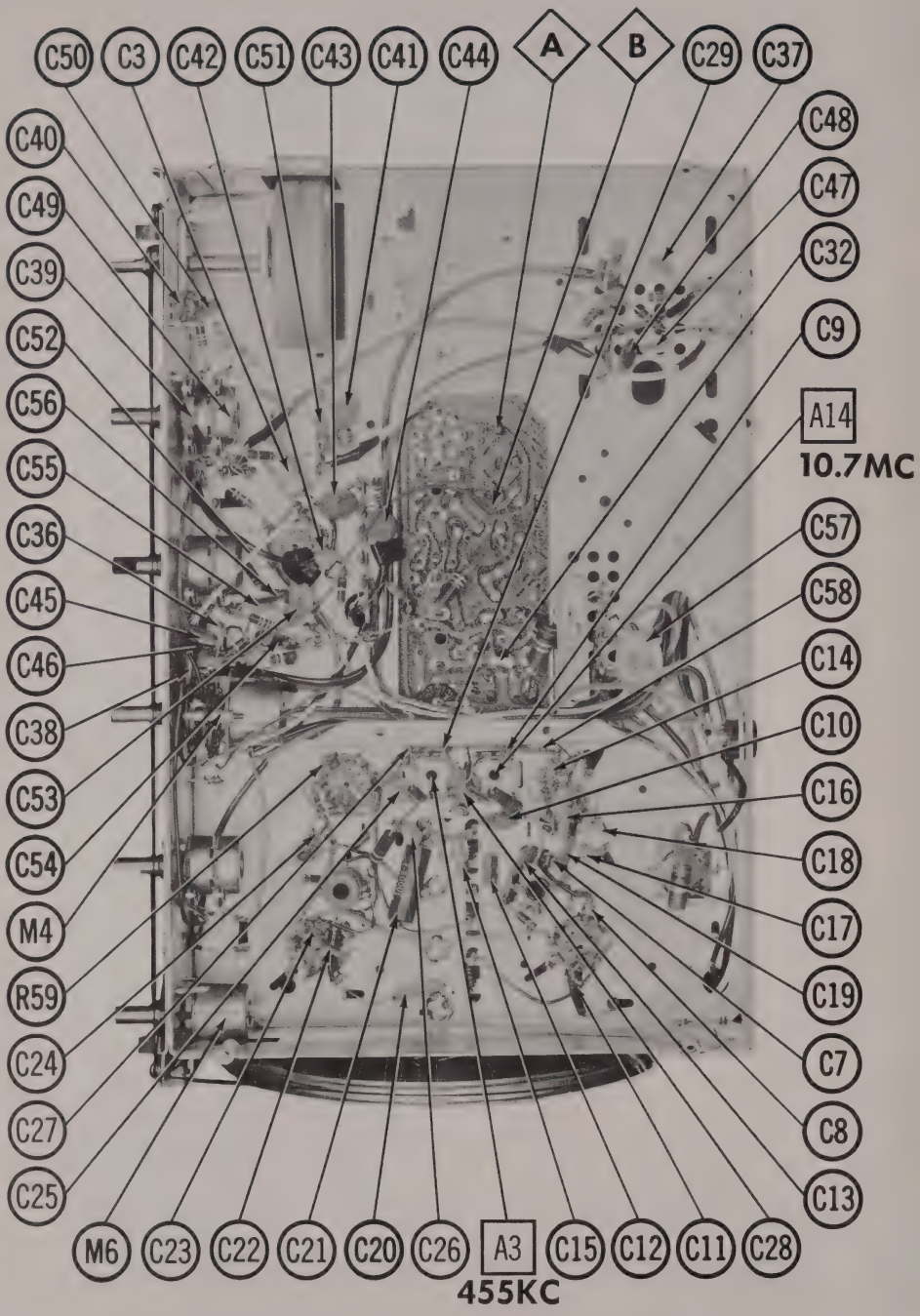
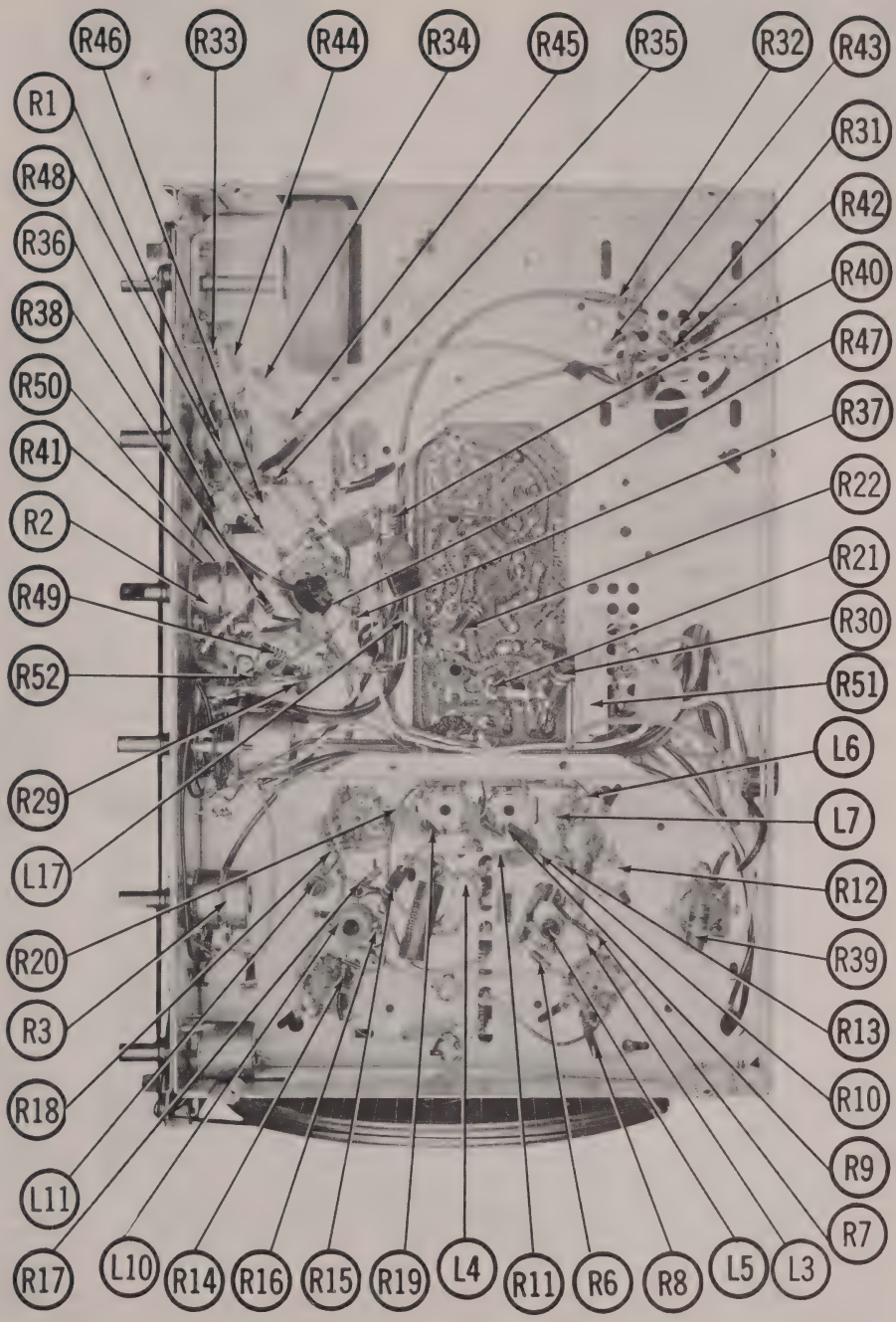
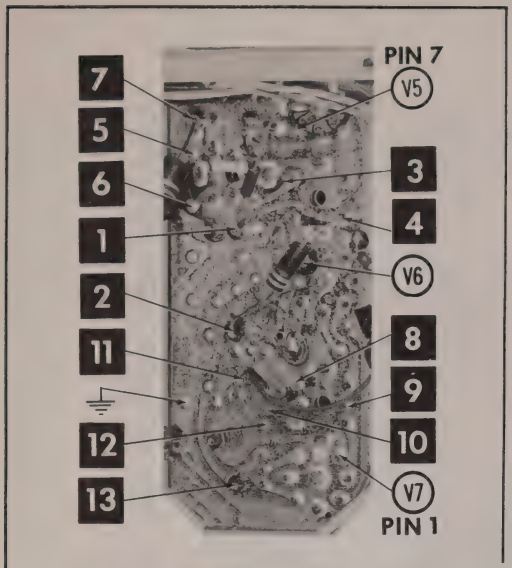
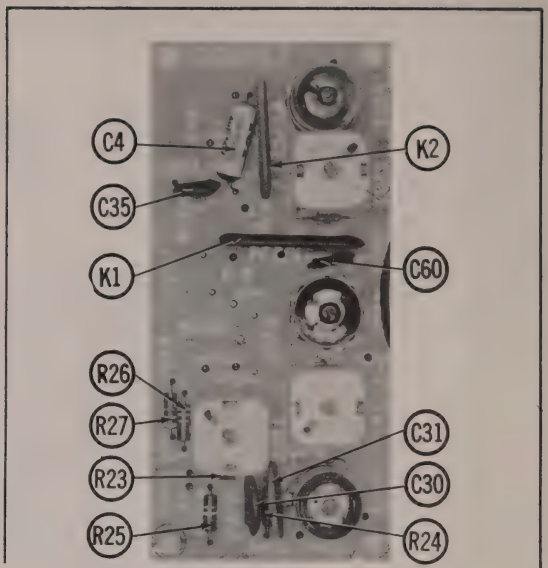


TUNER CHASSIS BOTTOM VIEW — ALIGNMENT, CAPACITOR & MISC. IDENT.



TUNER CHASSIS BOTTOM VIEW — RESISTOR & INDUCTOR IDENT.





A Howard W. Sams CIRCUITRACE® Photo

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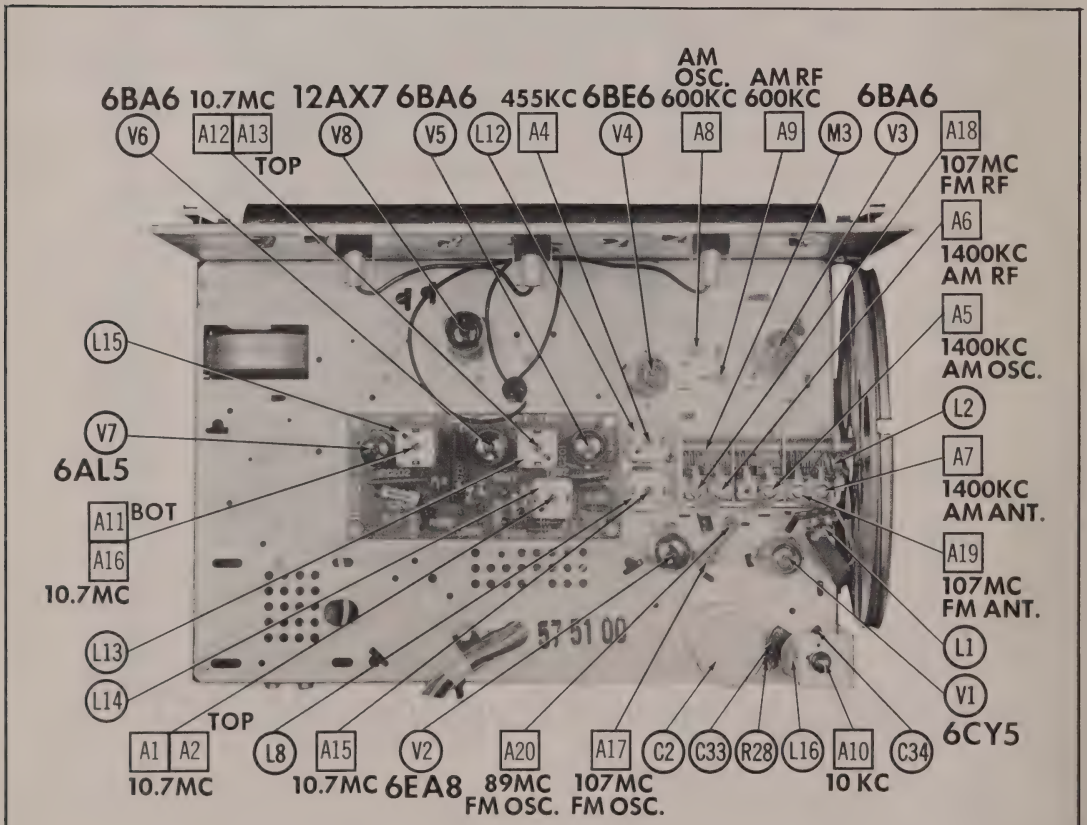


TUNER CHASSIS — TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1 thru A4, A11 thru A16....	GENERAL CEMENT #5097, 8727 WALSCO #2515
A5, A6, A7, A18, A19.....	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A8, A9, A10, A17, A20.....	GENERAL CEMENT #8721, 8722 WALSCO #2519

AM ALIGNMENT—SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	High side thru 10mmf to AM antenna terminal. Low side to chassis.	1400KC	1400KC	"	A5, A6, A7	"
3.	"	600KC	600KC	"	A8, A9	Adjust for maximum output. Repeat Steps 2 and 3.
4.	"	1400KC (10KC Mod.)	1400KC	"	A10	Adjust for MINIMUM deflection.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .01mfd to pin 5 (plate) of FM RF Amp. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point ⟨A⟩. Common to chassis.	A11, A12, A13, A14, A15	Adjust for maximum deflection.
6.	"	"	"	DC probe to point ⟨B⟩. Common to chassis.	A16	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .01mfd to pin 5 (plate) of FM RF Amp. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point ⟨A⟩. Low side to chassis.	A11, A12, A13, A14 A15	Disconnect Stabilizing Capacitor (C4). Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C4.
6.	"	"	"	Vert. Amp. to point ⟨B⟩. Low side to chassis.	A16	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A11 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM Antenna terminals with 120Ω in each lead.	107MC (Unmod.)	(FM) 107MC	DC probe to point ⟨A⟩. Common to chassis.	A17, A18, A19	Adjust for maximum deflection.
8.	"	89MC	89MC	"	A20	Adjust for maximum deflection. Repeat Steps 7 and 8.

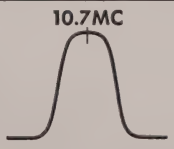
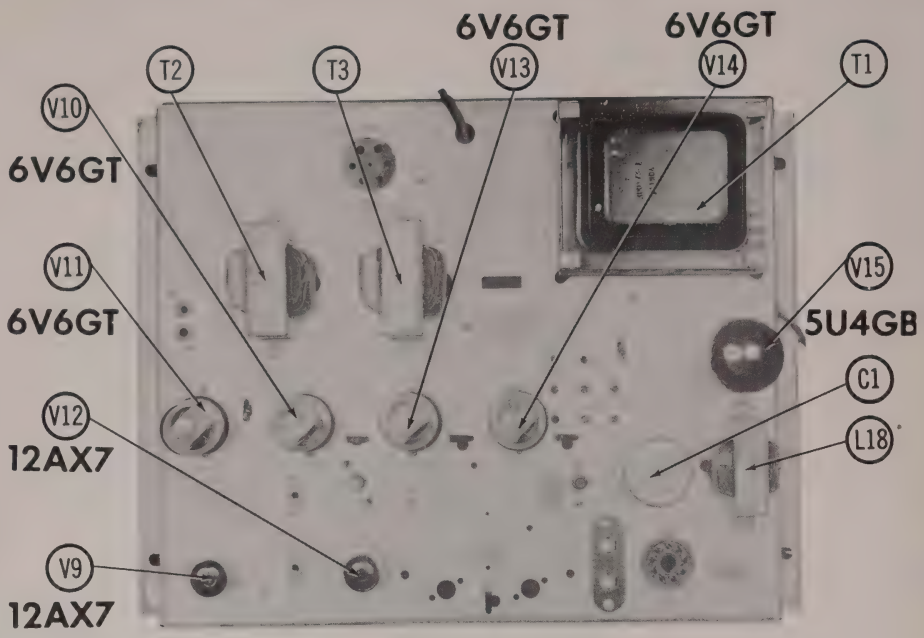
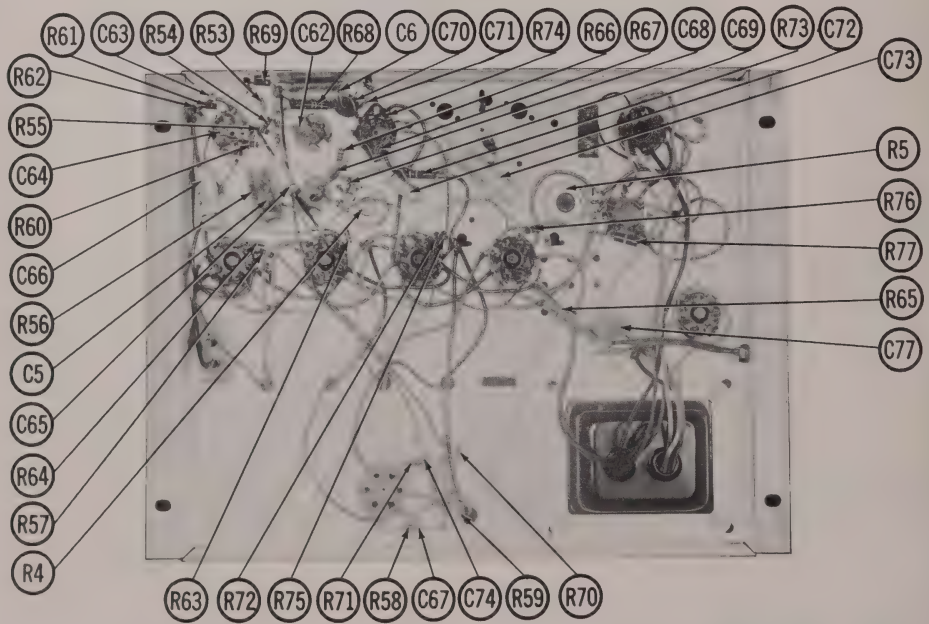


FIG. 1

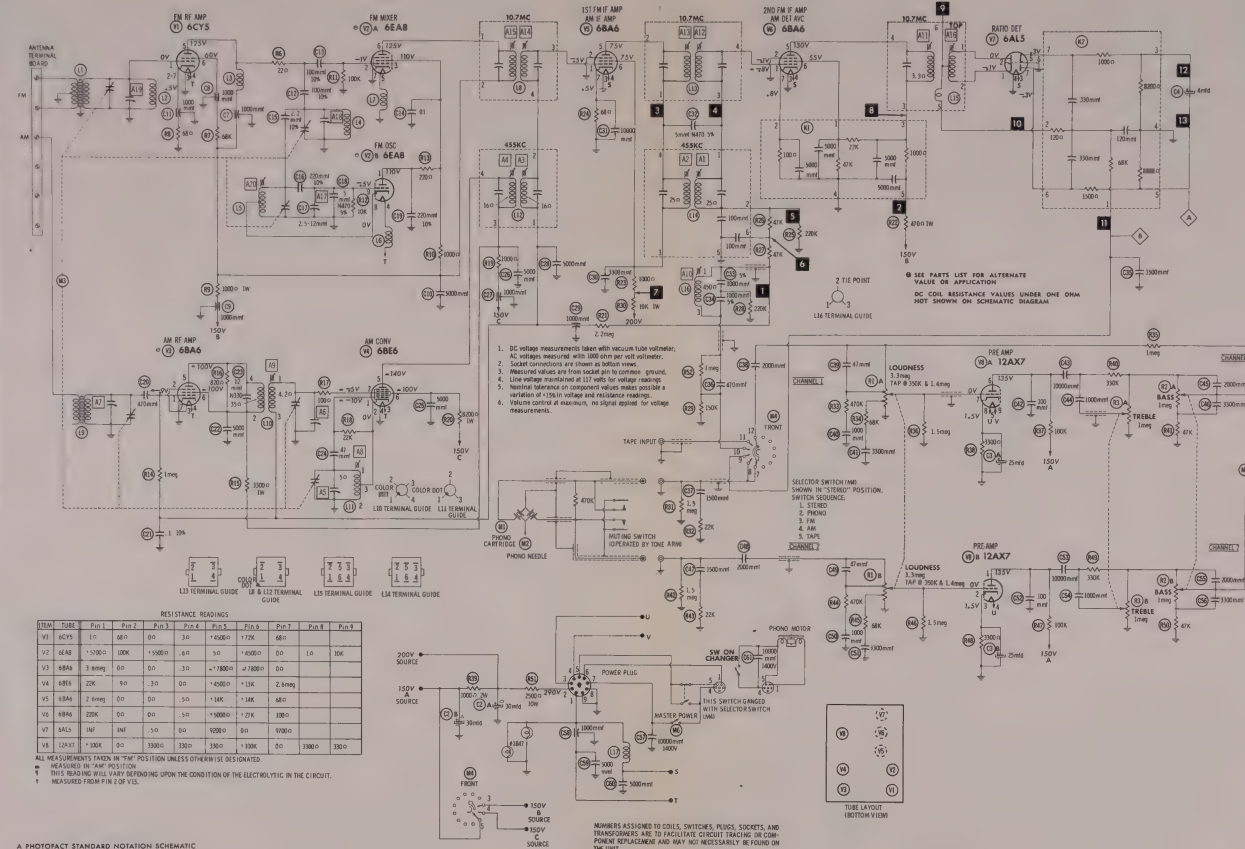
FIG. 2



AMP. CHASSIS — TOP VIEW



AMP. CHASSIS — BOTTOM VIEW


FM RF AMP V1 6CY5
FM MIXER V2A 6EA8
FM OSC V2B 6EA8
10.7MC
1ST FM IF AMP AM IF AMP V5 6BA6
2ND FM IF AMP AM DET AVC V6 6BA6
RATIO DET V7 6AL5
455KC
AM RF AMP V3 6BA6
AM CONV V4 6BE6
PRE AMP V8A 12AX7
PRE AMP V8B 12AX7
ANTENNA TERMINAL BOARD
FM
AM
TAPE INPUT
TAPE RECORD
OUTPUT
PHONO CARTRIDGE
PHONO NEEDLE
MUTING SWITCH (OPERATED BY TONE ARM)
PHONO MOTOR
SW ON CHANGER
POWER PLUG
MASTER POWER (AM)
THIS SWITCH GANGED WITH SELECTOR SWITCH (AM)
FRONT
REAR
LOUDNESS
TREBLE
BASS
CHANNEL 1
CHANNEL 2
2 TIE POINT
L10 TERMINAL GUIDE
L11 TERMINAL GUIDE
L8 & L12 TERMINAL GUIDE
L13 TERMINAL GUIDE
L15 TERMINAL GUIDE
L14 TERMINAL GUIDE
L16 TERMINAL GUIDE
TUBE LAYOUT (BOTTOM VIEW)
200V SOURCE
150V SOURCE
150V B SOURCE
150V C SOURCE
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
SELECTOR SWITCH (AM) SHOWN IN "STEREO" POSITION. SWITCH SEQUENCE: 1. STEREO 2. PHONO 3. FM 4. AM 5. TAPE
1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CY5	1Ω	68Ω	0Ω	3Ω	*4500Ω	*72K	68Ω		
V2	6EA8	*5700Ω	100K	*5500Ω	6Ω	5Ω	*4500Ω	0Ω	1Ω	10K
V3	6BA6	3.6meg	0Ω	0Ω	3Ω	∞†780Ω	∞†780Ω	0Ω		
V4	6BE6	22K	9Ω	3Ω	0Ω	*450Ω	*13K	2.6meg		
V5	6BA6	2.6meg	0Ω	0Ω	5Ω	*14K	*14K	68Ω		
V6	6BA6	220K	0Ω	0Ω	5Ω	*5000Ω	*27K	100Ω		
V7	6AL5	INF	INF	5Ω	0Ω	925Ω	0Ω	9700Ω		
V8	12AX7	*100K	0Ω	330Ω	330Ω	330Ω	*100K	0Ω	330Ω	330Ω

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
* MEASURED IN "AM" POSITION
† THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
‡ MEASURED FROM PIN 2 OF V1S.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CircuiTrace

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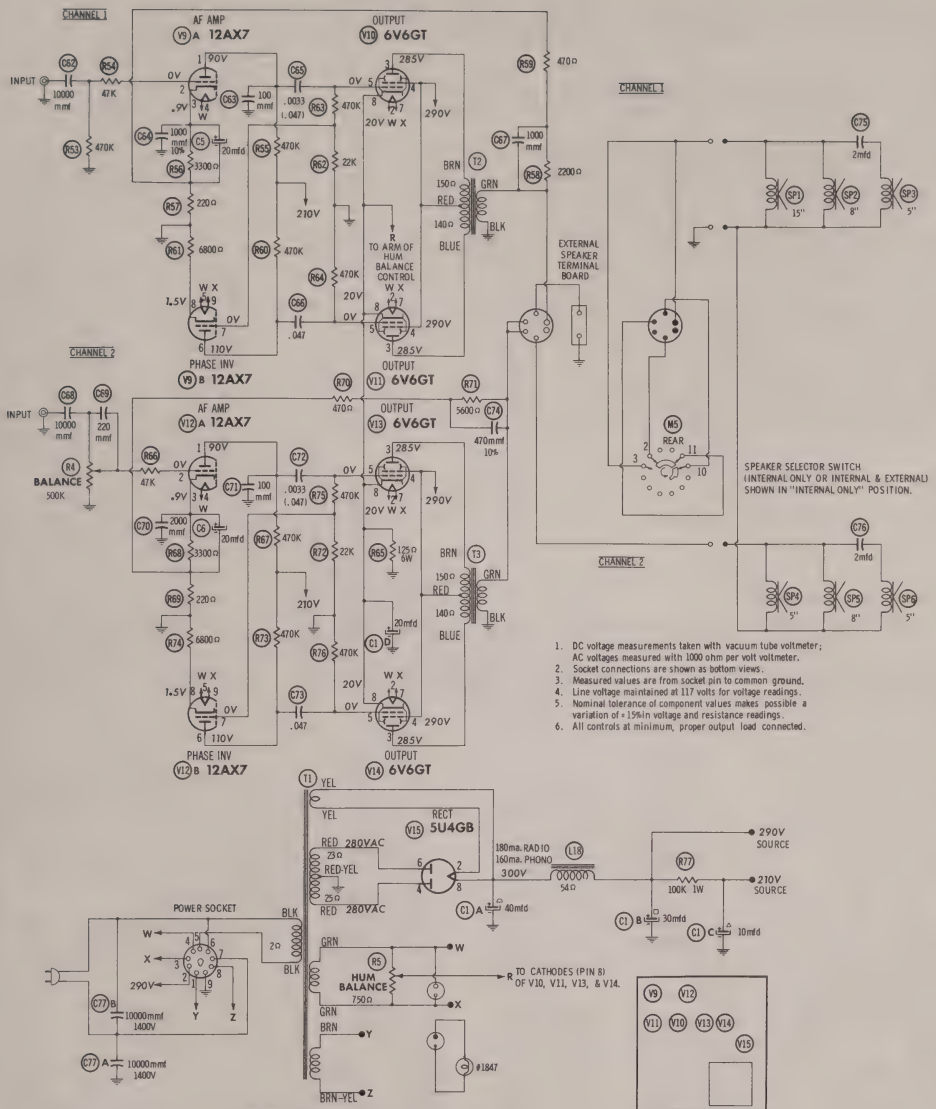
COLUMBIA MODELS C1168C, M, W

TUNER SCHEMATIC



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS (Cont.)

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V9	12AX7	†570K	520K	3500Ω	3?0Ω	330Ω	†570K	22K	6800Ω	330Ω
V10	6V6GT	NC	330Ω	†200Ω	†54Ω	490K	TP	330Ω	125Ω	
V11	6V6GT	NC	330Ω	†190Ω	†54Ω	470K	TP	330Ω	125Ω	
V12	12AX7	†570K	0Ω	3500Ω	330Ω	330Ω	†570K	22K	6800Ω	330Ω
V13	6V6GT	NC	330Ω	†200Ω	†54Ω	490K	TP	330Ω	125Ω	
V14	6V6GT	NC	330Ω	†190Ω	†54Ω	470K	NC	330Ω	125Ω	
V15	5U4GB	NC	¶	NC	25Ω	NC	23Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 2 OF V15.
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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COLUMBIA MODELS
C1168C, M, W

AMPLIFIER SCHEMATIC

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	FM RF Amplifier	6CY5
V2	FM Mixer-Osc.	6EA8 (6U8) *
V3	AM RF Amplifier	6BA6 (6BZ6) *
V4	AM Converter	6BE6
V5	1st FM-AM IF Amplifier	6BA6
V6	2nd FM IF Amplifier-AM Det. -AVC	6BA6
V7	Ratio Detector	6AL5
V8	Channel 1 Preamp. - Channel 2 Preamp.	12AX7
V9	Channel 1 AF Amplifier-Phase Inverter	12AX7
V10	Channel 1 Output	6V6GT
V11	Channel 1 Output	6V6GT
V12	Channel 2 AF Amplifier-Phase Inverter	12AX7
V13	Channel 2 Output	6V6GT
V14	Channel 2 Output	6V6GT
V15	Rectifier	5U4GB

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA COLUMBIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450	11F753	AFH4-78	D0640	FP429	TMQ-92	TVL-4734	
B	■30	450							
C	▲10	450							
D	20	25							
C2A	▲30	450	11F752	AFH2-54	B0430	FP237	TMD-52	TVL-2759	
B	▲30	450							
C3A	25	25	11F751	PRS2175	BBRD3315	TCD26	TDLD-4	TVA-2434	
B	25	25							
C4	4	50	11F750	PTT50005	NLW4-50	TT50X4	ML4-50	TE-1302.1	
C5	20	25		XPP-25020	NLW20-25	TT25X20	ML20-25	TE-1206	
C6	20	25		XPP-25020	NLW20-25	TT25X20	ML20-25	TE-1206	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	1000		EF-001	MFT-1000		CCF-102	CT280A	
C8	1000		EF-001	MFT-1000		CCF-102	CT280A	
C9	1000		EF-001	MFT-1000		CCF-102	CT280A	
C10	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C11	1000		EF-001	MFT-1000		CCF-102	CT280A	
C12	100 10%		1469-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235	MS-310
C13	100 10%		1469-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235	MS-310
C14	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C15	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C16	220 10%		1469-00022	TCZ-220	22R5T22	CM-19B-221K	CNO-322	MS-322
C17	2.5-12					*		
C18	5 N470 5%							
C19	220 10%		1469-00022	TCZ-220	22R5T22	CM-19B-221K	B-322	MS-322
C20	470		1468-00047	DD-471	5W5T47	CM-19B-471M	GP347	1FM-347
C21	.1 100V 10%		V84C2P1-10%		PM2P1	1DP-2-104	GEM-201	2TM-P1
C22	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C23	12 N330					*		10TCS-Q12
C24	47		BPD-00047	DD-470	L10Q47	CCD-447	GP447	10TS-Q47
C25	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C26	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C27	1000		EF-001	MFT-1000		CCF-102	CT280A	
C28	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C29	1000		EF-001	MFT-1000		CCF-102	CT280A	
C30	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C31	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C32	5 N470 5%					*		
C33	1000 5%		1469-001		1R5D1	CM-19B-102J	MCJ255	MS-21
C34	1000 5%		1469-001		1R5D1	CM-19B-102J	MCJ255	MS-21

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C35	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C36	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C37	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C38	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C39	47		BPD-000047	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C40	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C41	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C42	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C43	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C44	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C45	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C46	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C47	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C48	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C49	47		BPD-000047	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C50	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C51	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C52	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C53	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C54	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C55	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C56	3300		BPD-0033	DD-332	BYA10D3	CCD-332	B-233	5HK-D33
C57	10000 1400V		DAC-27	DDI6-103	HVE16S1	16DP-3-103	UAC-110	BL-S10
C58	1000		EF-001	MFT-1000		CCF-102	CT280A	
C59	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C60	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C61	10000 1400V		DAC-27	DDI6-103	HVE16S1	16DP-2-103	UAC-110	BL-S10
C62	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C63	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C64	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C65	.0033 400V	(.047) †	P488N-0033	D6-332	CUB6D33	6DP-1-332	GEM-6233	6TM-D33
C66	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C67	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C68	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C69	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C70	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C71	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C72	.0033 400V	(.047) †	P488N-0033	D6-332	CUB6D33	6DP-1-332	GEM-6133	6TM-D33
C73	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C74	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C75	2mfd 50V		P282Z-2.0		MP2W2			11SP20502S2
C76	2mfd 50V		P282Z-2.0		MP2W2			11SP20502S2
C77A	10000 1400V		DAC-27	DDI6-103	HVE16S1	16DP-3-103	UAC-110	BL-S10
B	10000 1400V		DAC-27	DDI6-103	HVE16S1	16DP-3-103	UAC-110	BL-S10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Alternate Value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA COLUMBIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3.3meg*	1/2	9F635	BT-180			FA36DT155	Loudness, Channel 1
B	3.3meg*	1/2		STR-180			RU36DT155	Loudness, Channel 2
C	Shaft			Not Req.			CS3500	
R2A	1meg	1/2	9F636	B-70	AD47-1meg-Z		FA16A	Bass, Channel 1
B	1meg			SR-70	Not Req.		RU16A	Bass, Channel 2
C	Shaft			Not Req.	FS-3		CS3500	
R3A	1meg	1/2	9F636	B-70	AD47-1meg-Z		FA16A	Treble, Channel 1
B	1meg			SR-70	Not Req.		RU16A	Treble, Channel 2
C	Shaft			Not Req.	FS-3		CS3500	
R4A	500K	1/2	9F637	BX-59	B47-500K-Z	Bll-133	TA55L	Channel 2 Balance
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R5A	750Ω	1/2	9F638	AB-5	B47-750-S	Bll-105	PTA75IL	Hum Balance
B	Shaft			AK-1	Not Req.	TM4	Not Req.	

* Tans @ 350K and 1.4meg.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R6	22Ω	
R7	68K	
R8	68Ω	
R9	1000Ω 1W	
R10	1000Ω	
R11	100K	
R12	10K	
R13	220Ω	
R14	1meg	
R15	3300Ω 1W	
R16	820Ω	
R17	100Ω	
R18	22K	
R19	1000Ω	
R20	8200Ω 1W	
R21	2.2meg	
R22	470Ω 1W	
R23	1000Ω	
R24	68Ω	
R25	220K	
R26	47K	
R27	47K	
R28	220K	
R29	150K	

ITEM No.	RATING	REMARKS
R30	10K 1W	
R31	1.5meg	
R32	22K	
R33	470K	
R34	68K	
R35	1meg	
R36	1.5meg	
R37	100K	
R38	3300Ω	
R39	1000Ω 2W	
R40	330K	
R41	47K	
R42	1.5meg	
R43	22K	
R44	470K	
R45	68K	
R46	1.5meg	
R47	100K	
R48	3300Ω	
R49	330K	
R50	47K	
R51	2500Ω 10W	
R52	1meg	
R53	470K	

ITEM No.	RATING	REMARKS
R54	47K	
R55	470K	
R56	3300Ω	
R57	220Ω	
R58	2200Ω	
R59	470Ω	
R60	470K	
R61	6800Ω	
R62	22K	
R63	470K	
R64	470K	
R65	125Ω 6W	
R66	47K	
R67	470K	
R68	3300Ω	
R69	220Ω	
R70	470Ω	
R71	5600Ω	
R72	22K	
R73	470K	
R74	6800Ω	
R75	470K	
R76	470K	
R77	100K 1W	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	COLUMBIA PART No.	REPLACEMENT DATA
K1	Limiter Network	(4) 5000mmf, 100Ω, 1000Ω, 22K, 47K		
K2	Ratio Det. Network	120mmf, (2) 330mmf, 120Ω, 1000Ω, (2) 8200Ω, 68K, 1500Ω		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		COLUMBIA PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Trans.	20F342				
L2	FM Ant. Coil	20F351				
L3	RF Choke	21F212	BC-562	4604		1.8uh
L4	FM RF Coil	20F352				
L5	FM Osc. Coil	20F353				
L6	Fil. Choke	21F212	BC-562	4604		1.8uh
L7	Fil. Choke	21F212	BC-562	4604		1.8uh
L8	1st FM IF Trans.	20F343	FM-254	1463		
L9	Loopstick	20F344	BC-419			
L10	AM RF Trans.	20F345	BC-388	70-RF		
L11	AM Osc. Coil	20F346	BC-394	70-OSC		
L12	1st AM IF Trans.	20F347	BC-352	12-C1	RF-1	
L13	2nd FM IF Trans.	20F348		1463-PC		
L14	2nd AM IF Trans.	20F349	BC-329	13-PC6	RF-4 *	
L15	Ratio Det.	20F350		1465-PC		
L16	10KC Filter	21F213				
L17	Fil. Choke	21F212	BC-562	4604		1.8uh

* Connect two 100mmf capacitors externally.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	COLUMBIA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L18	.180A	54Ω	1.4 HY	21F211	C-2994	F-804	C-2327	26C41	C-21X①	

① Drill new mounting hole.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	SEC. 2	COLUMBIA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V@ 1.2A	560 VCT @.180A	5V@ 3A	2F116	P-3055	P-709	P-8167	26R72	R-52BC①	
	SEC. 3	SEC. 4	SEC. 5							
	6.3V@ 2.5A	6.3V@ 2.8A								

① Tape 1.2A (6.3V) Winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	COLUMBIA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6200Ω CT	3-4Ω	3F247	A-2901①	AU-609	A-3870	22S58	S-55X	
T3	6200Ω CT	3-4Ω	3F247	A-2901①	AU-609	A-3870	22S58	S-55X	

① Drill new mounting holes.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	COLUMBIA PART No.	QUAM PART No.	
SP1	15"	PM	4-6Ω	1F152	15A10LZ5.2	
SP2	8"	PM	4-6Ω	1F148	8A2IZ5	
SP3	5"	PM	3-4Ω	1F147	5A15TZ3.8	
SP4	15"	PM	4-6Ω	1F152	15A10LZ5.2	
SP5	8"	PM	4-6Ω	1F148	8A2IZ5.2	
SP6	5"	PM	3-4Ω	1F147	5A15TZ3.8	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA									
	COLUMBIA PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M1	CD-SC-1D	13TB		26S	S1-1 S3-3			8TA4-S	N-8TA-S

PARTS LIST AND DESCRIPTIONS (Continued)

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA		REMARKS
	COLUMBIA PART No.	JENSEN PART No.	
M2		CS-1X † or CS-1D ♦	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	COLUMBIA PART No.	NOTES
M3	Tuning Cap.	14F110	3 Gang (Ant. 25-331mmf, RF 24-265mmf, Osc. 16-140mmf)
M4	Switch	19F693	Band Selector (Rotary)
M5	Switch	19F692	Speaker
M6	Switch	19F694	Power Off-On

CABINETS & CABINET PARTS

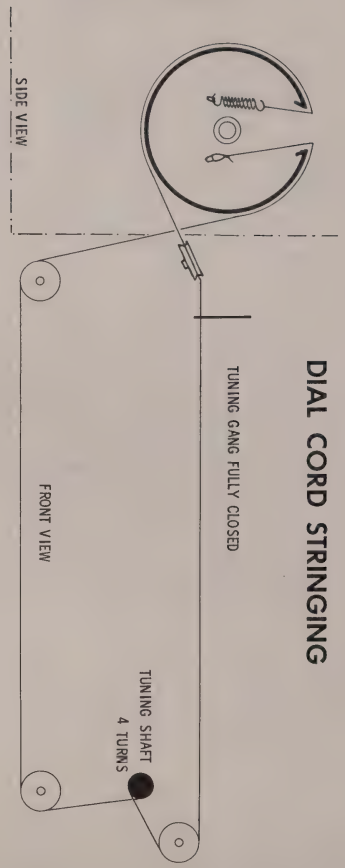
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial	19F696	Glass
Pointer	19F699	Dial
Knob	8F511	Tuning, Loudness, Bass, Treble
Knob	8F512	Selector
Cabinet	17F847	Mahogany
Cabinet	17F848	Walnut
Cabinet	17F849	Cherry

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

DIAL CORD STRINGING



PHOTOFACT® Folder

COLUMBIA MODELS 901, 903, C1004G, T, C1006B, T

COLUMBIA MODELS 901, 903, C1004G, T, C1006B, T

MODEL 901

COLUMBIA MODELS 901, 903, C1004G, T, C1006B, T

TRADE NAME	Columbia Models 901, 903, C1004G, C1004T, C1006B, C1006T
MANUFACTURER	CBS Electronics, 100 Endicott Street, Danvers, Mass.
TYPE SET	AC Operated 2 Tube Stereo Phono Amplifier (Models 901, C1004 are 3 Speed Manual Record Players, Model C1006 is 4 Speed Manual Record Player, Model 903 is 4 Speed Automatic Record Changer)
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 58 Watts, .8 Watts@117 Volts AC (Less Motor)

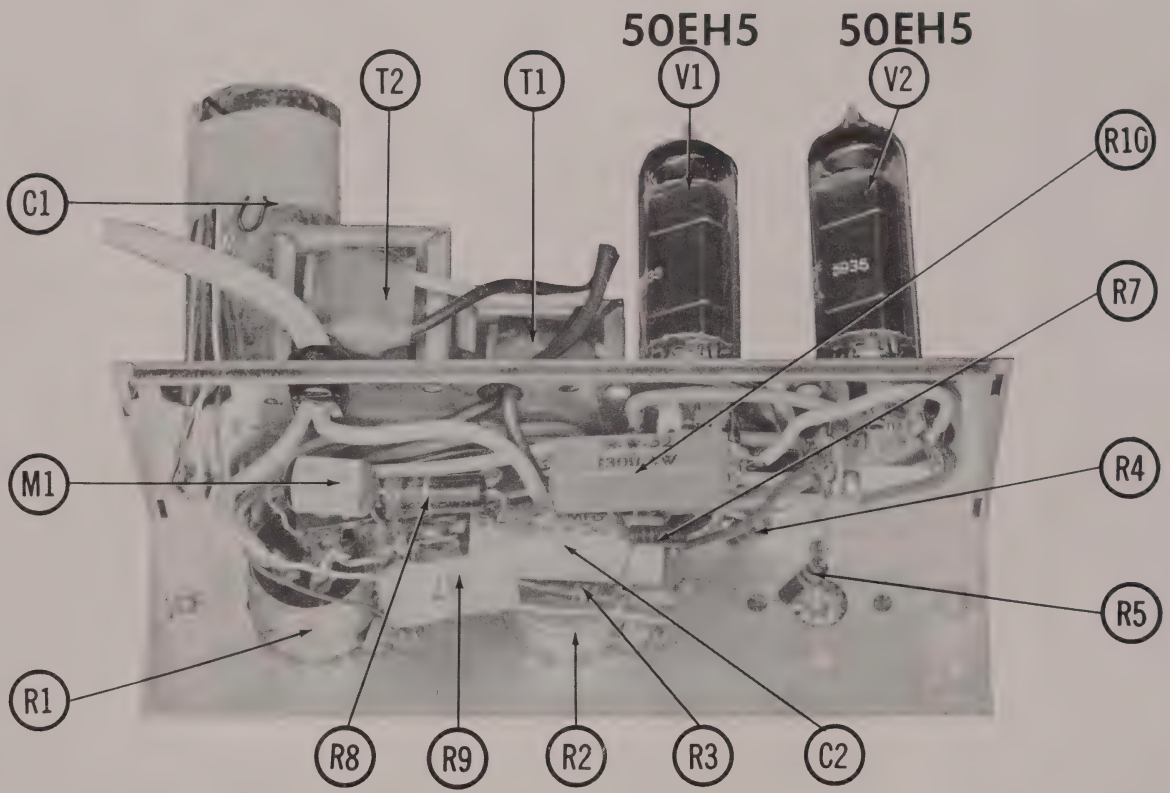
FOR SERVICE INFORMATION ON RECORD CHANGER USED IN MODEL 904 — SEE MONARCH UA8 — PHOTOFACT SET 381 FOLDER 11 OR RECORD CHANGER MANUAL RC-11

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JR927

DATE 9—60 SET 500 FOLDER 6



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel A Output	50EH5	V2	Channel B Output	50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA COLUMBIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	150	11B744	PR4-200	BBRQ0174	TCT3119	TDLT-3	TVAS-3446*	
B	40	150				TC45	TD-50-150	TVA-1415	
C	20	150							
D	20	150							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA COLUMBIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	9B612	B-60-S	A47-500K-Z	Q13-133	U48	Volume A Note 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On
R2A	500K	½	9B570	B-60	A47-500K-Z	Q13-133	U48	Volume B Note 2
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

Note 1. Not used in Models 903, C1006B, T.
Note 2. 2 Used in Models 903, C1006B, T.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	33K	
R4	82Ω 1W	
R5	33K	

ITEM No.	RATING	REMARKS
R6	100Ω 1W	
R7	2200Ω	
R8	100Ω 1W	

ITEM No.	RATING	REMARKS
R9	47Ω 2W	#16B447 ①
R10	130Ω 4W	#16B432

Columbia Part Number.
① Fuse Type.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA COLUMBIA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	3900Ω	3-4Ω	3B221 ①	A-2900	AU-608	A-3850	24S04	S-51X	
T2	3900Ω	3-4Ω	3B221 ①	A-2900	AU-608	A-3850	24S04	S-51X	

① Alternate Part #3B241 Used in Models 903; C1004G, T; C1006B, T.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA COLUMBIA PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	1A102 *	4A07	* Used In Models 901, 903
SP2	4"	PM	3-4Ω	1A102 *	4A07	◆ 2 Used in Model C1004
	4"	PM	3-4Ω	1B102 ◆	4A1	‡ 2 Used in Model C1006
	5"	PM		1B155 ‡		

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA COLUMBIA PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.060A	10B615	RE504	1N1764	K200	SR200	Silicon

PHONO CARTRIDGE

ITEM No.	COLUMBIA PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M2	ST-40 ①	KR74-TS K314-T (Tone Arm)		96	Not Req.			12TH-S	

① TC8-S-3 may be used in some versions.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA COLUMBIA PART No.	REPLACEMENT DATA JENSEN PART No.	REMARKS
M3		CRA-55 † or CRA-55D ◆ and CRA-55X † or CRA-55XD ◆	† Jewel ◆ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	COLUMBIA PART No.	NOTES
M4	Motor	6B313	Phono Drive, Models 901, C1004 (Ivory Knob)
	Motor	6B315	Phono Drive, Model C1004 (Tan Knob)
	Motor	6B316	Phono Drive, Model C1006 (Grey)
	Motor	6B317	Phono Drive, Model C1006 (Brown)
	Idler Wheel (Model 901 only)		Walsco Part Number 1433

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

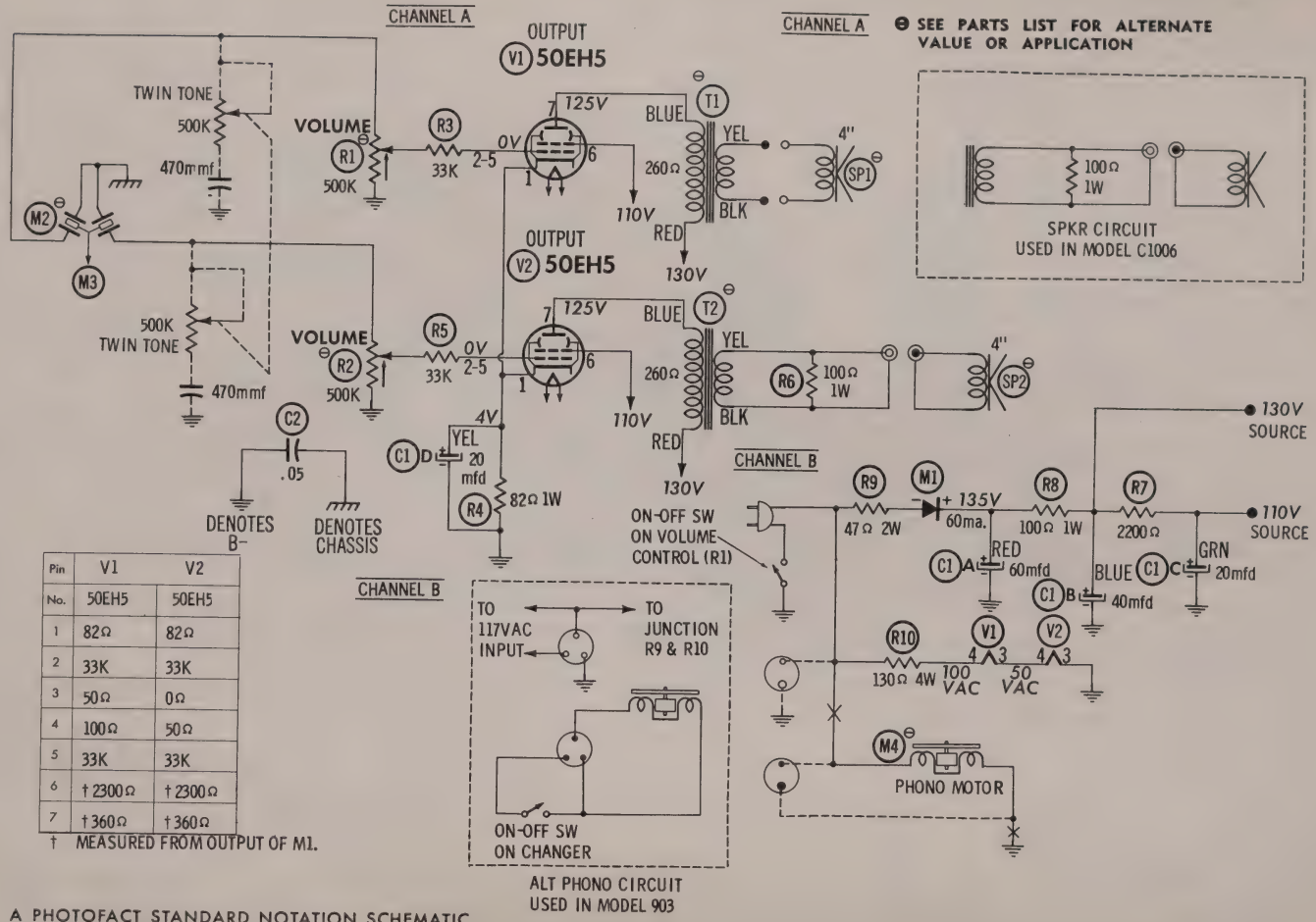
NAME	PART NO.	DESCRIPTION
Knob	8B499	Volume (Tan, Channel A) Model 903
Knob	8B500	Volume (Tan, Channel B) Model 903
Knob	8B451	Volume, Gray, Model 901
Knob	8B457	Volume, Gray, Models C1006B, T; C1004G, T
Knob	8B520	Volume, Tan, Models C1006B, T; C1004G, T
Cabinet	17B824	Gray & White, Model 901
Cabinet	17B825	Brown & White, Model 903
Cabinet	17B872	Tan, Models C1006B, T
Cabinet	17B873	Blue, Models C1006B, T
Cabinet	17B870	Brown & White, Models C1004G, T
Cabinet	17B871	Grey & White, Models C1004G, T

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

COLUMBIA MODELS 901, 903, C1004G, T, C1006B, T

FOLDER 6



Pin No.	V1 50EH5	V2 50EH5
1	82Ω	82Ω
2	33K	33K
3	50Ω	0Ω
4	100Ω	50Ω
5	33K	33K
6	†2300Ω	†2300Ω
7	†360Ω	†360Ω

† MEASURED FROM OUTPUT OF M1.

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PHOTOFACT® Folder with CIRCUITRACE®

CROWN MODEL TR-800

CROWN MODEL
TR-800

CROWN MODEL
TR-800

TRADE NAME	Crown Model TR-800
IMPORTER	Shriro, Inc., 276 Fourth Ave., New York 10, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	6 Volts DC
RATING	8 MA @ 6 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	535 — 1650KC
	20 MA @ 6 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A4 and A6..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400 ∿ Mod.	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	Tune to 1400KC Signal.	"	A6	Adjust for maximum output while rocking tuning gang.

SET 500 FOLDER 7

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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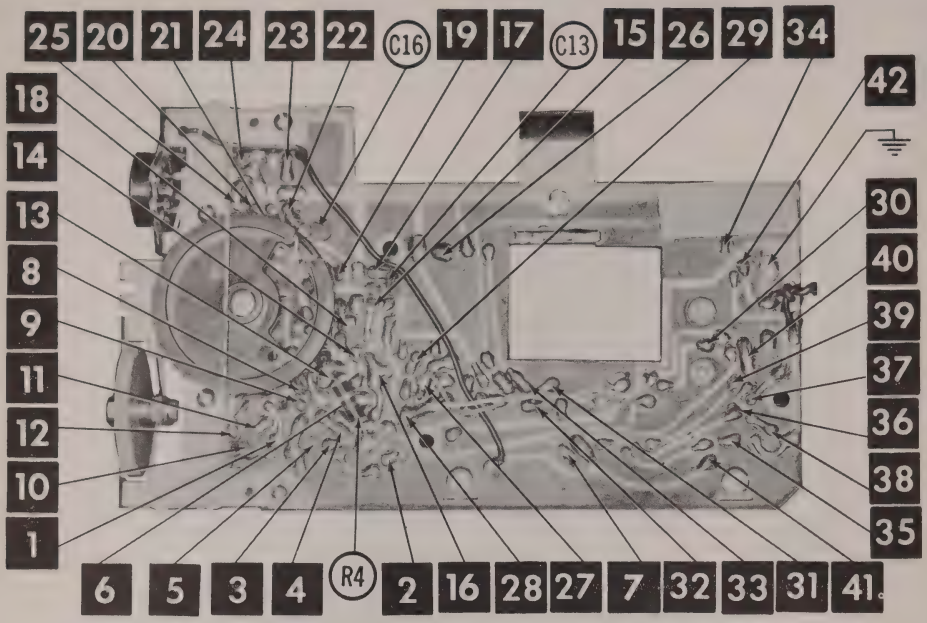

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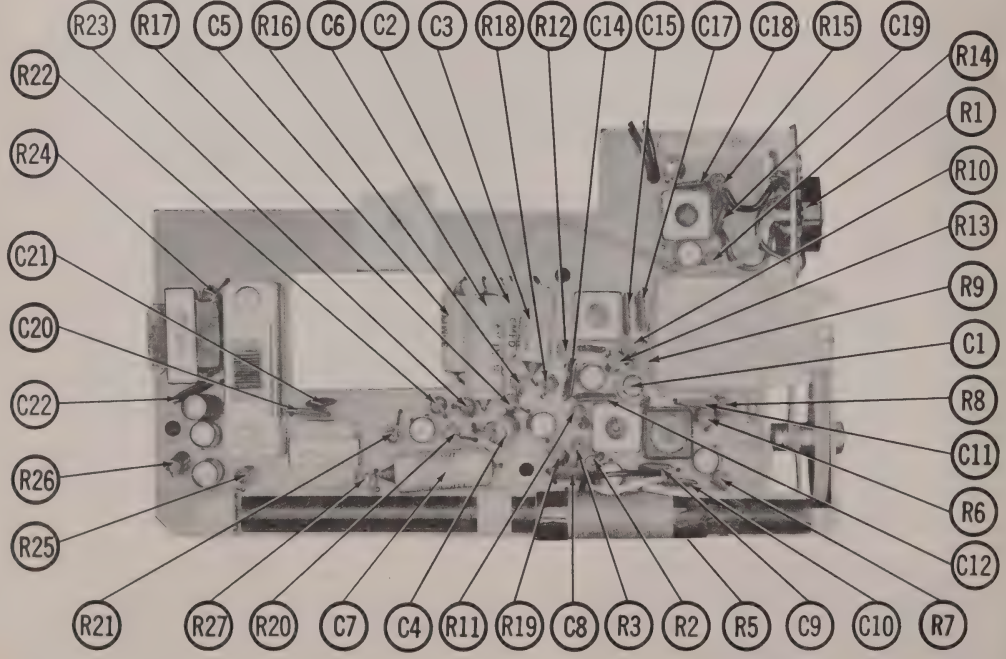
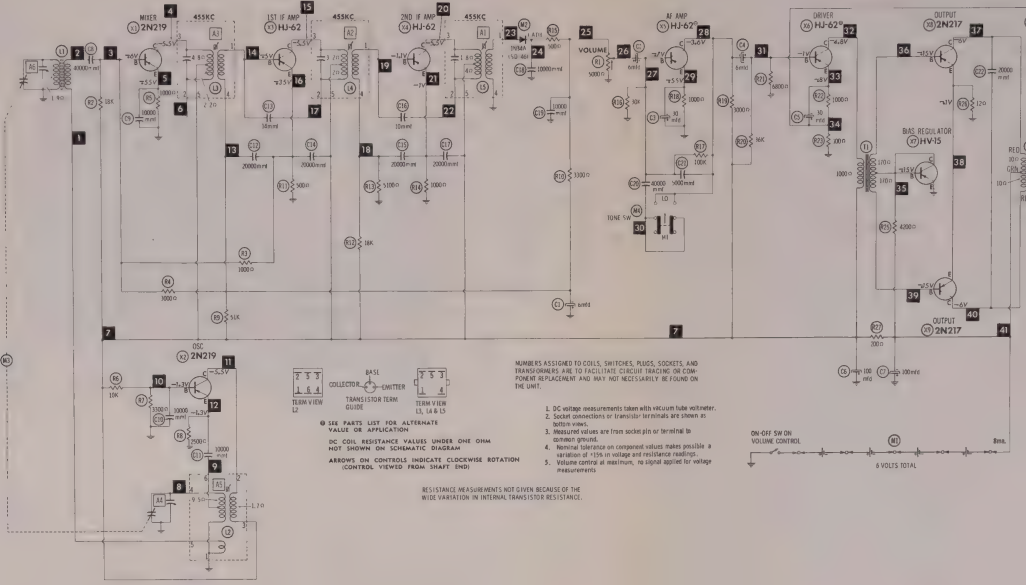
PRINTED BOARD



PRINTED BOARD-CAPACITOR AND RESISTOR IDENTIFICATION



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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CROWN MODEL TR-800

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N219	Mixer		2N219	2N485	2N219	PNP
X2	2N219	Oscillator					PNP
X3	HJ-62	1st IF Amplifier		2N219	2N485	2N219	PNP
X4	HJ-62	2nd IF Amplifier					PNP
X5	HJ-62 *	AF Amplifier		2N407	2N362	2N104	PNP
X6	HJ-62 *	Driver		2N407	2N362	2N104	PNP
X7	HV-15	Bias Regulator					PNP
X8	2N217	Output		2N217	2N633	2N217	PNP
X9	2N217	Output		2N217	2N633	2N217	PNP

* Alternate Type 2N215.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	CROWN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	6	6			NLW5-6	TT6X5	ML6-6	TE-1085	
C2	6	6			NLW5-6	TT6X5	ML6-6	TE-1085	
C3	30	6		XPP-6030	NLW30-6	TT6X30	ML30-6	TE-1092	
C4	6	6			NLW5-6	TT6X5	ML6-6	TE-1085	
C5	30	6		XPP-6030	NLW30-6	TT6X30	ML30-6	TE-1092	
C6	100	6		PTT6100	NLW100-6	TT6X100	ML100-6	TE-1102	
C7	100	6		PTT6100	NLW100-6	TT6X100	ML100-6	TE-1102	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	40000							
C9	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10
C10	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10
C11	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10
C12	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20
C13	14		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C14	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20
C15	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20
C16	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C17	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20
C18	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10
C19	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10
C20	40000							
C21	5000		C80V502AM	DDM-502	H-05D5	CCD-502	TA-250	TG-D50
C22	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CROWN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4	161-S3					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	18K	
R3	1000Ω	
R4	3000Ω	
R5	1000Ω	
R6	10K	
R7	3300Ω	
R8	2500Ω	
R9	51K	
R10	3300Ω	

ITEM No.	RATING	REMARKS
R11	500Ω	
R12	18K	
R13	5100Ω	
R14	1000Ω	
R15	500Ω	
R16	30K	
R17	100K	
R18	1000Ω	
R19	3000Ω	

ITEM No.	RATING	REMARKS
R20	30K	
R21	6800Ω	
R22	1000Ω	
R23	100Ω	
R24	5100Ω	
R25	4200Ω	
R26	12Ω	
R27	200Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		CROWN PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	8ØX120				
L2	Osc. Coil	8017				
L3	1st IF Trans.	8508				
L4	2nd IF Trans.	8603				
L5	3rd IF Trans.	8549				

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	CROWN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.4	1	TRT-29		TA-31①			① Use primary for secondary and secondary for primary.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CROWN PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	350Ω CT	10-12Ω	TRT-4			TA-20	TR-16		

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CROWN PART No.	QUAM PART No.	
SP1	3"	PM	10-12Ω	PA-301		

BATTERIES

ITEM No.	VOLTAGE	CROWN PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			930 *		1015 *		M-15R *	* 4 Required

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		CROWN PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N34A *		1N34A	1N34A	1N34A	Detector (Pigtail)

* Alternate Type SD-46.

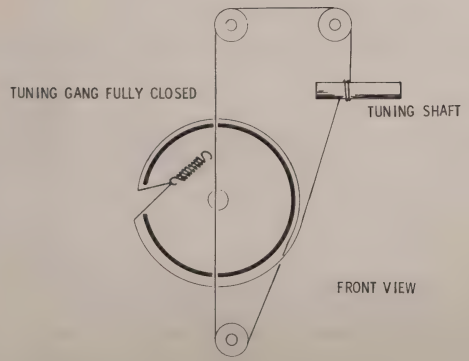
MISCELLANEOUS

ITEM No.	PART NAME	CROWN PART No.	NOTES
M3 M4	Tuning Cap Switch		2 Gang Tone (Slide Type DPDT)

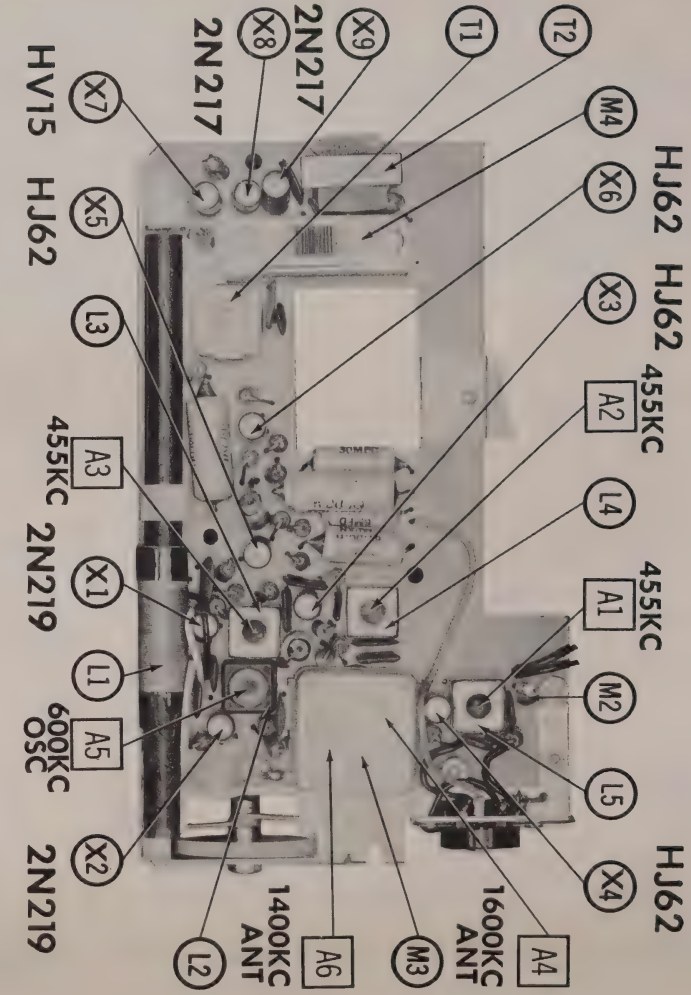
WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

DIAL CORD STRINGING



CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE™

EMERSON MODELS 908B, 909B, 912B, 921B, 973, 974 (Ch. 120466B, 120468B, 120480B, 120495B)

EMERSON MODELS 908B, 909B, 912B, 921B, 973, 974 (Ch. 120466B, 120468B, 120480B, 120495B)

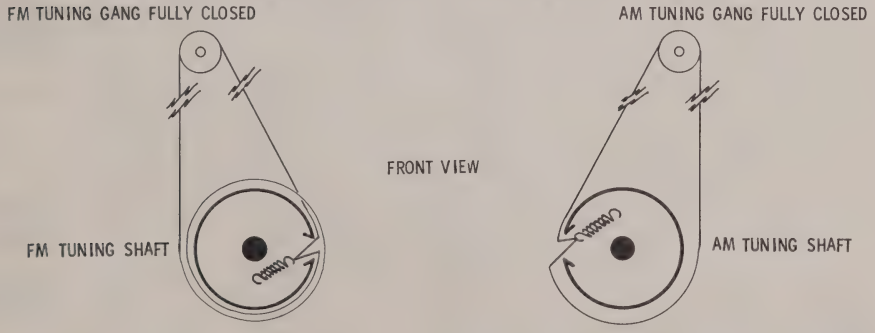
MODEL 908B

TRADE NAME	Emerson Models 908B (Ch. 120466B), 909B (Ch. 120468B), 912B (Ch. 120480B), 921B (Ch. 120495B), 973, 974 (Auxiliary Speaker Unit)
MANUFACTURER	Emerson Radio & Phono Corp., 524 W. 23rd Street, New York 11, N. Y.
TYPE SET	AC Operated 8 Tube FM-AM Receiver With Stereo Amplifier (All Models except 908B have 4 Speed Automatic Record Changers)
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 64 Watts, .7 Amp. @117 Volts AC (FM-AM)
TUNING RANGE—BROADCAST	535 — 1638KC FREQ. MOD. 88-108MC

MODELS 909B and 921D HAVE RECORD CHANGER PART #819135 — FOR SERVICE INFORMATION REFER TO SIMILAR GLASER-STEERS GS-77 — PHOTOFACT SET 399 FOLDER 7 OR RECORD CHANGER MANUAL RC-11

MODEL 912B HAS RECORD CHANGER PART #819152 — FOR SERVICE INFORMATION REFER TO SIMILAR WEBCOR 168 — PHOTOFACT SET 447 FOLDER 13 OR RECORD CHANGER MANUAL RC-12

DIAL CORD STRINGING

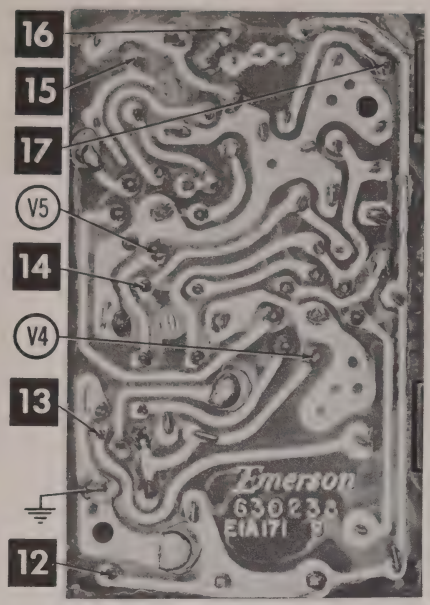


HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JK932

SET 500 FOLDER 8



AM PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

A Howard W. Sams CIRCUITRACE® Photo

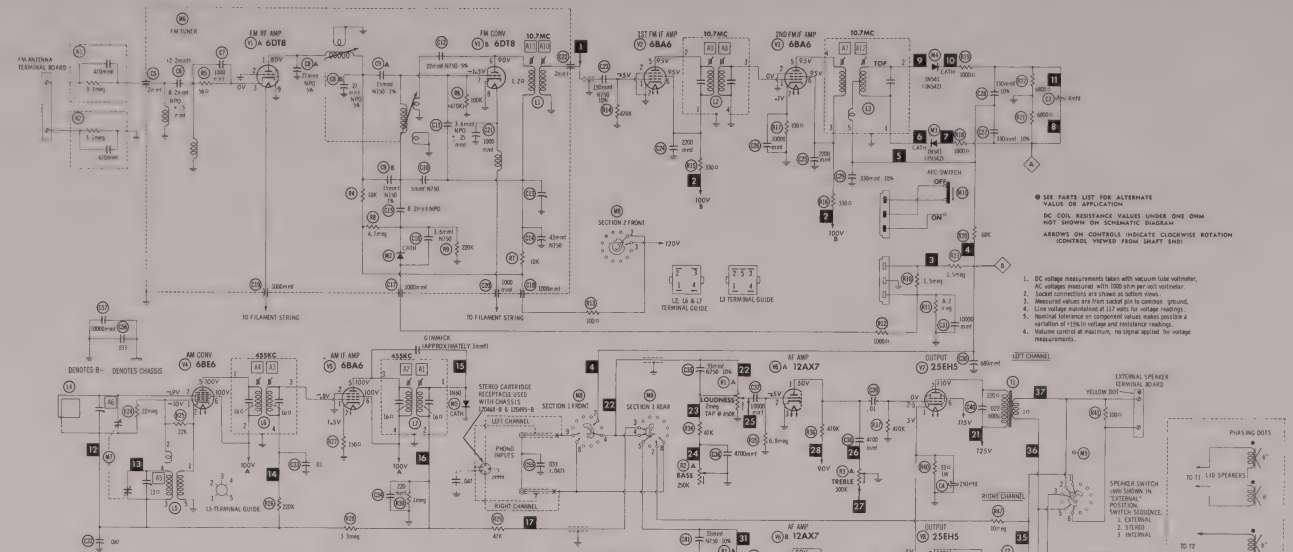
FM PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

A Howard W. Sams CIRCUITRACE® Photo

AUDIO PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6DT8	*12K	0Ω	56Ω	6Ω	12Ω	*12K	100K	0Ω	0Ω
V2	6BA6	470K	0Ω	12Ω	18Ω	*750Ω	*750Ω	0Ω		
V3	6BA6	1Ω	0Ω	18Ω	24Ω	*750Ω	*750Ω	100Ω		
V4	6BE6	22K	2Ω	30Ω	24Ω	*770Ω	*770Ω	*4.3meg		
V5	6BA6	*4.3meg	0Ω	30Ω	36Ω	*770Ω	*770Ω	150Ω		
V6	12AX7	*570K	6.8meg	0Ω	0Ω	0Ω	*570K	6.8meg	0Ω	6Ω
V7	25EH5	33Ω	470K	6Ω	8Ω	470K	*970Ω	*310Ω		
V8	25EH5	33Ω	470K	36Ω	6Ω	470K	*970Ω	*310Ω		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
* MEASURED IN "AM" POSITION.
† MEASURED FROM OUTPUT OF ML

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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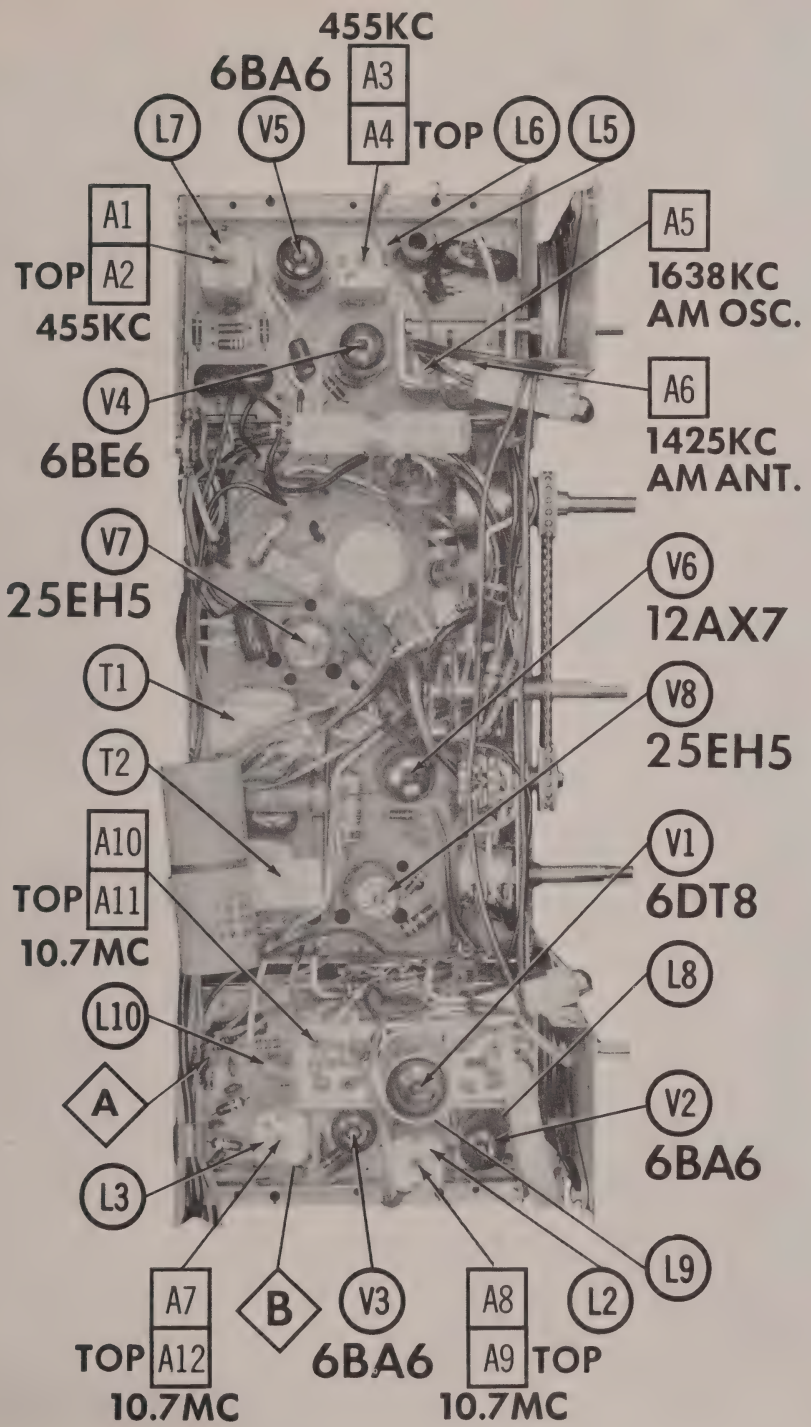
EMERSON MODELS 908B, 909B, 912B, 921B, 973, 974 (Ch. 120466B, 120468B, 120480B, 120495B)



CHASSIS – TOP VIEW

EMERSON
MODEL 908B

FOLDER 8

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1, A2, A3, A4, A7, A12...	GENERAL CEMENT #5097, 8727 WALSCO #2515
A5, A6.....	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A8, A9.....	GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 WALSCO #2526, 2543, 2544, 2545
A10, A11.....	GENERAL CEMENT #9296, 9297 WALSCO #2546, 2547

AM ALIGNMENT—SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .005mfd to pin 7 (grid) of AM Converter. Low side to chassis	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1638KC	"	"	A5	Adjust for maximum output.
3.	"	1425KC	Tune to 1425KC Signal.	"	A6	Adjust for maximum output. Repeat Steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	Across FM antenna terminals.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point ◇A◇. Common to chassis.	A7, A8, A9, A10, A11	Adjust for maximum deflection.
5.	"	"	"	DC probe to point ◇B◇. Common to chassis.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	Across FM Antenna terminals.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. Amp. to point ◇A◇. Low side to chassis.	A7, A8, A9, A10, A11	Disconnect Stabilizing Capacitor C3. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C3.
5.	"	"	"	Vert. Amp. to point ◇B◇. Low side to chassis.	A12	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

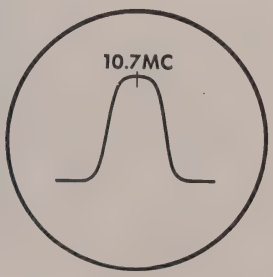


FIG. 1

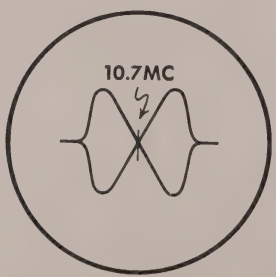
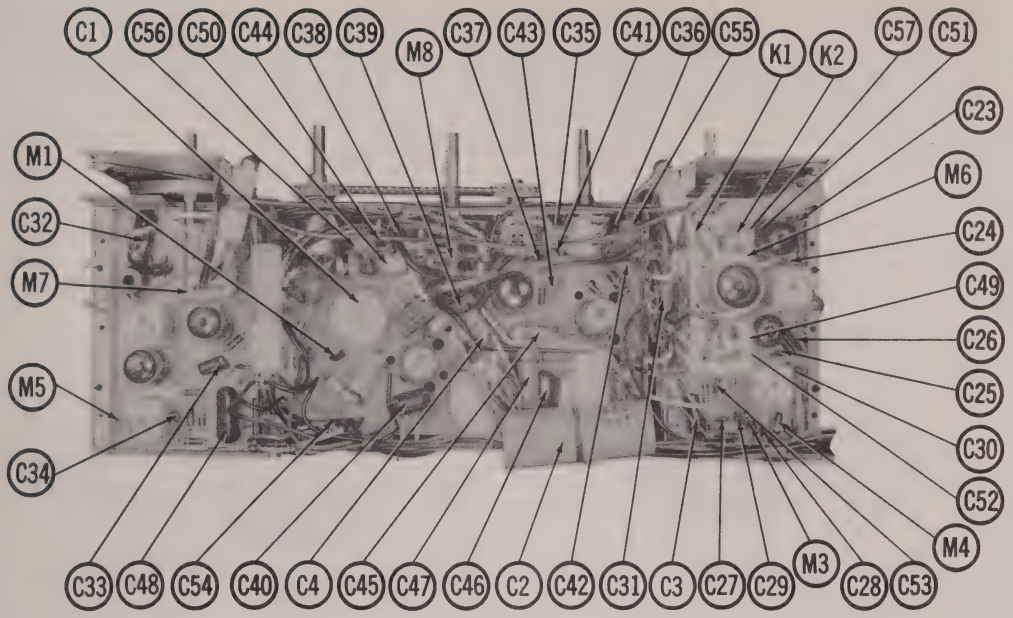
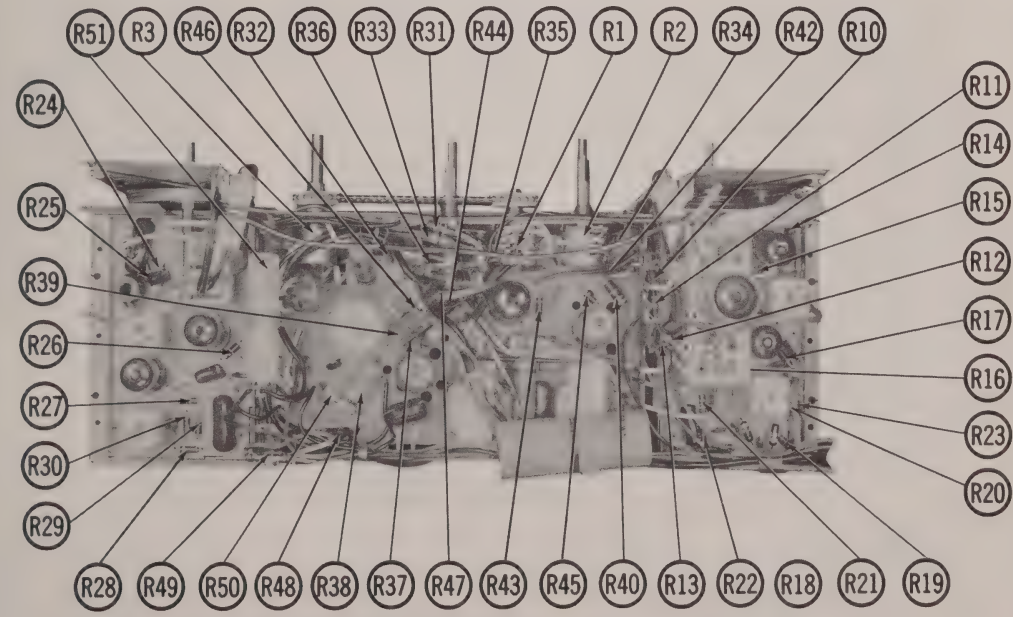


FIG. 2



CHASSIS TOP VIEW — CAPACITOR & MISC. IDENT.



CHASSIS TOP VIEW — RESISTOR IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	• GENERAL ELECTRIC •	RAYTHEON • SYLVANIA •			
V1	FM RF Amp. -FM Conv.	6DT8	V6	Left Channel AF Amp. - Right Channel AF Amp.	12AX7
V2	1st FM IF Amplifier	6BA6	V7	Left Channel Output	25EH5
V3	2nd FM IF Amplifier	6BA6	V8	Right Channel Output	25EH5
V4	AM Converter	6BE6			
V5	AM IF Amplifier	6BA6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■80	160	925470					PCLS-3447.2*	
B	▲100	160							
C	40	150							
C2A	40	160	925473	PR3-020	BBRQ0789.5	WT458	TDLD-9 / TD-60-250	TVA-4618	
B	60	160							
C	60	160							
C3	4	50	925474	PRS1310	BBR4-50	TT50X4	ML4-50	TE-1302.1	
C4	250	15	925461	PRS1210	BR2501	TC50025	TD-250-15	TVA-1161	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	2	#962682						
C6	8.2 NPO ± .5mmf		NPO-DI 8.2		C10V82C			10TCC-V82
C7	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C8A	27 NPO 5%			TCZ-27	C10Q27C		CNO-427	10TCC-Q27
B	27 NPO 5%			TCZ-27	C10Q27C		CNO-427	10TCC-Q27
C9A	15 N150 5%					*		10TCP-Q15
B	15 N150 5%					*		10TCP-Q15
C10	5 N750			DTN-5	C10V5C	CCTN-050	CN7-547	10TCU-V50
C11	3.6 NPO ± .25mmf							10TCU-V39
C12	22 N750 5%			DTN-22	C10Q22U		CN7-422	10TCU-Q22
C13								
C14	43 N750				C10Q43U			
C15	8.2 NPO		NPO-DI 8.2		C10V82C			10TCC-V82

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C16	3.6 N750							
C17	1000		EF-001	MFT-1000		CCF-102	CT280A	
C18	1000		EF-001	MFT-1000		CCF-102	CT280A	
C19	1000		EF-001	MFT-1000		CCF-102	CT280A	
C20	1000		EF-001	MFT-1000		CCF-102	CT280A	
C21	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C22	2	#962682						
C23	150 N750 10%		N750-DI 150	DTN-150	C10T15U	CCTN-151	CN7-315	10TCU-T15
C24	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C25	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C26	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C28	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C29	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C30	680		BPD-00068	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C31	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C32	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C33	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C34	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C35	33 N750 10%		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C36	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C37	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C38	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C39	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C40	.022 600V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C41	33 N750 10%		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C42	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C43	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C44	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C45	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C46	.022 600V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C47	.033 400V	(.047) †	P488N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	6TM-S33
C48	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C49	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C50	.22 200V		P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C51	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C52	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C53	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C54	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C55	.033 400V	(.047) †	P488N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	6TM-S33
C56	.033 400V		P488N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	6TM-S33
C57	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

\# Emerson Part Number.
† Alternate Value.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	EMERSON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg		390583					Loudness, Left Channel
	450K Tap							
B	2meg							Loudness, Right Channel
	450K Tap							
R2A	250K		390597					Bass, Left Channel
B	250K							Bass, Right Channel
R3A	500K		390596					Treble, Left Channel
B	500K							Treble, Right Channel
C	Switch							Power On-Off

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	10K	
R5	56Ω	
R6	100K	(470K) *
R7	10K	
R8	4.7meg	
R9	220K	
R10	1.5meg	
R11	8.2meg	
R12	1000Ω	
R13	100Ω	
R14	470K	
R15	330Ω	
R16	330Ω	
R17	100Ω	
R18	1000Ω	
R19	1000Ω	
R20	68K	

ITEM No.	RATING	REMARKS
R21	6800Ω	
R22	6800Ω	
R23	1.5meg	
R24	22meg	
R25	22K	
R26	220K	
R27	150Ω	
R28	3.3meg	
R29	47K	
R30	1meg	
R31	560Ω 1W	
R32	270Ω	
R33	18Ω 1W	
R34	47K	
R35	6.8meg	
R36	470K	
R37	470K	

ITEM No.	RATING	REMARKS
R38	150Ω 5W	
R39	820Ω 3W	
R40	33Ω 1W	
R41	100Ω	
R42	47K	
R43	6.8meg	
R44	470K	
R45	470K	
R46	100K	
R47	10meg	
R48	100Ω	
R49	1000Ω	
R50	22Ω	#397133 ①
R51A	33Ω } 15W	#394211
B	33Ω } 15W	
C	66Ω	

* Alternate Value.
# Emerson Part Number.
① Fuse Type.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	EMERSON PART No.	REPLACEMENT DATA
K1	FM Antenna Filter	470mmf, .3-1meg	923152	Centralab RC-471 Sprague AC1-1
K2	FM Antenna Filter	470mmf, .3-1meg	923152	Centralab RC-471 Sprague AC1-1

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		EMERSON PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	1st FM IF Trans.	962684				
L2	2nd FM IF Trans.	720351		1463-PC		
L3	Ratio Det.	708358		1465-PC		
L4	Loop Ant.	700153				
L5	AM Osc. Coil	716119				
L6	1st AM IF Trans.	720259-3	BC-356	13-PC1	RF-4	
L7	2nd AM IF Trans.	720259-4	BC-357	13-PC2	RF-4	
L8	Fil. Choke	705034	BC-564	4608		3.3uh ①
L9	Fil. Choke	705034	BC-564	4608		3.3uh ①
L10	Fil. Choke	705034	BC-564	4608		3.3uh ①

① IRC Part #CLA

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	EMERSON PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3300Ω	6-8Ω	734181	A-2902①	AU-604①	A-3849①	24S06①	S-53X①	① Use Original Frame
T2	3300Ω	6-8Ω	734181	A-2902①	AU-604①	A-3849①	24S06①	S-53X①	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	EMERSON PART No.	QUAM PART No.	
SP1	6"	PM	6-8Ω	180193 *‡	6A21Z5.8	* Models 908-B, 974
	3½"	PM	2-3Ω	180191 ♦		♦ Three in Model 909-B, Two in Model 973
	12"	PM	6-8Ω	180192 ♦	12A31PA	‡ Model 912B
	6"	PM	3-4Ω	180197 ‡	6A15R	† Model 921D
	6"	PM		180220 †		
	3½"	PM		180219 †		
	10"	PM		180221 †		

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	EMERSON PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.130A	817079 *	RE504 *	1N1764 *	K200 *	SR200 *	* Silicon

PARTS LIST AND DESCRIPTIONS (Continued)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		EMERSON PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2		962685				AFC Diode (Part of FM Tuner) Pigtail
M3	1N541 *	817082	1N295	1N295	1N295	FM Det.) Matched Pair
M4	1N541 *	817082	1N295	1N295	1N295	FM Det.)
M5	1N60	817061	1N60	1N60	1N60	AM Detector

* Alternate Type 1N542.

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M6	Tuner	471161	FM (Complete)
M7	Tuning Cap	900189	AM 2 Gang
M8	Switch	510153	Function (Rotary Wafer Type)
M9	Switch	510146	Speaker (Lever Type) Chassis 120466B
	Switch	510156	Speaker, Chassis 120468B
M10	Switch	510154	AFC Off-On (SPDT Slide Type)
	Switch	510141	External Speaker On-Off (Model 973)

CABINETS & CABINET PARTS

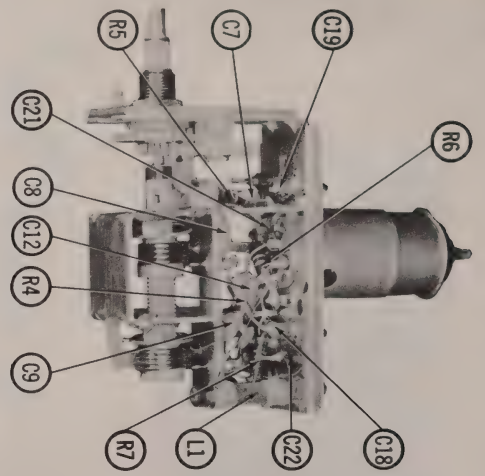
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

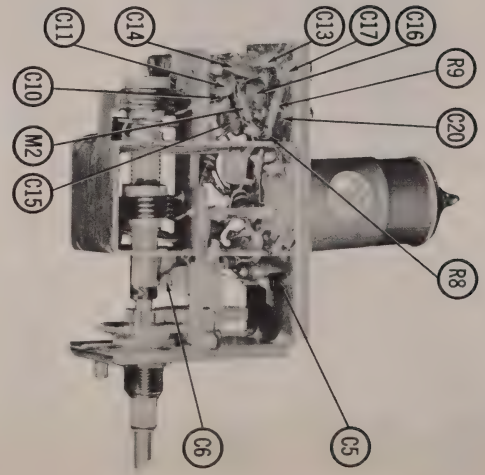
NAME	PART NO.	DESCRIPTION
Dial	520274	Glass, AM, Models 908B, 909B
Dial	520275	Glass, FM, Models 908B, 909B
Dial	520285	Glass, AM, Model 912B
Dial	520286	Glass, FM, Model 912B
Dial	520282A	Glass, Model 921D
Pointer	525083	Dial, Models 921D, 908B
Chain	413489	Bead, Model 908B
Knob	461121	FM, Tuning, Models 908B, 912B, 921D, 909B
Knob	461124	AM, Tuning, Models 908B, 912B, 921D, 909B
Knob	461094	Loudness, Treble (Inner), Models 908B, 912B, 921D, 909B
Knob	461153	Loudness, Bass (Outer), Model 908B
Knob	461093	Loudness, Bass (Outer) Models 912B, 921D, 909B
Knob	461095	Selector, Models 908B, 912B, 921D, 909B
Knob	460935	Speaker Selector, Models 908B, 909B
Cabinet	141008	Mahogany, Model 908B
Cabinet	141008A	Limed Oak, Model 908B
Cabinet	141008B	Walnut, Model 908B
Cabinet	141012	Mahogany, Model 909B
Cabinet	141012A	Limed Oak, Model 909B
Cabinet	141012B	Walnut, Model 909B
Cabinet	141046	Ebony & White With Gold Stardust, Model 912B
Cabinet	141092	Mahongay, Model 921D
Cabinet	141092A	Limed Oak, Model 921D
Cabinet	141092B	Wainut, Model 921D
Cabinet	141032	Speaker, Mahogany, Model 974
Cabinet	141032A	Speaker, Limed Oak, Model 974
Cabinet	141032B	Speaker, Walnut, Model 974
Legs	620357	Apron And Leg Assembly, Front & Rear, Mahogany, Model 921D
Legs	620357A	Apron And Leg Assembly, Front & Rear, Limed Oak 921D
Legs	620357B	Apron And Leg Assembly, Front & Rear, Walnut,921D
Lid	620359	Mahogany, Model 921D
Lid	620359A	Limed Oak, Model 921D
Lid	620359B	Walnut, Model 921D
Lid	560711	Model 912B

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)

FM RF SUBCHASSIS

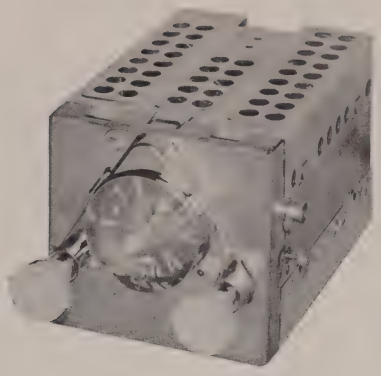




PHOTOFACT® Folder with CIRCUITRACE®

FORD MODEL 04BT (COTF-18805-F)

FORD MODEL
04BT (COTF-18805-F)



TRADE NAME	Ford Model 04BT (COTF-18805-F) For 1960 Ford Trucks
MANUFACTURER	Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Maryland
TYPE SET	Battery Operated 4 Tube, 1 Transistor Custom Built Truck AM Receiver
POWER SUPPLY	12 Volt Storage Battery
TUNING RANGE—BROADCAST	535 — 1605KC RATING 1.4 Amp. @12.6 Volts DC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools: A1, A2, A3, A4..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A8, A9, A10..... See Fig. 2.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	262.5KC (400∿ Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1605KC	"	"	A5, A6, A7	"
	Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9, A10) out of coils but not out of coil forms. Repeat Step 2.					
3.	Thru dummy (Fig. 1) to antenna receptacle.	1200KC	Tuner carriage .285" from high freq. end stop.	Across voice coil.	A8, A9, A10	Adjust for maximum output. Repeat Steps 2 and 3 until no further improvement is obtained.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1600KC and adjust A7 for maximum output.					

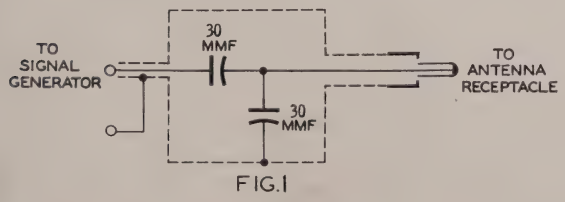


FIG. 1

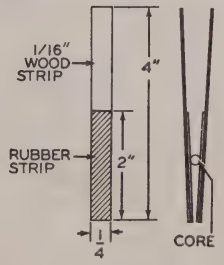


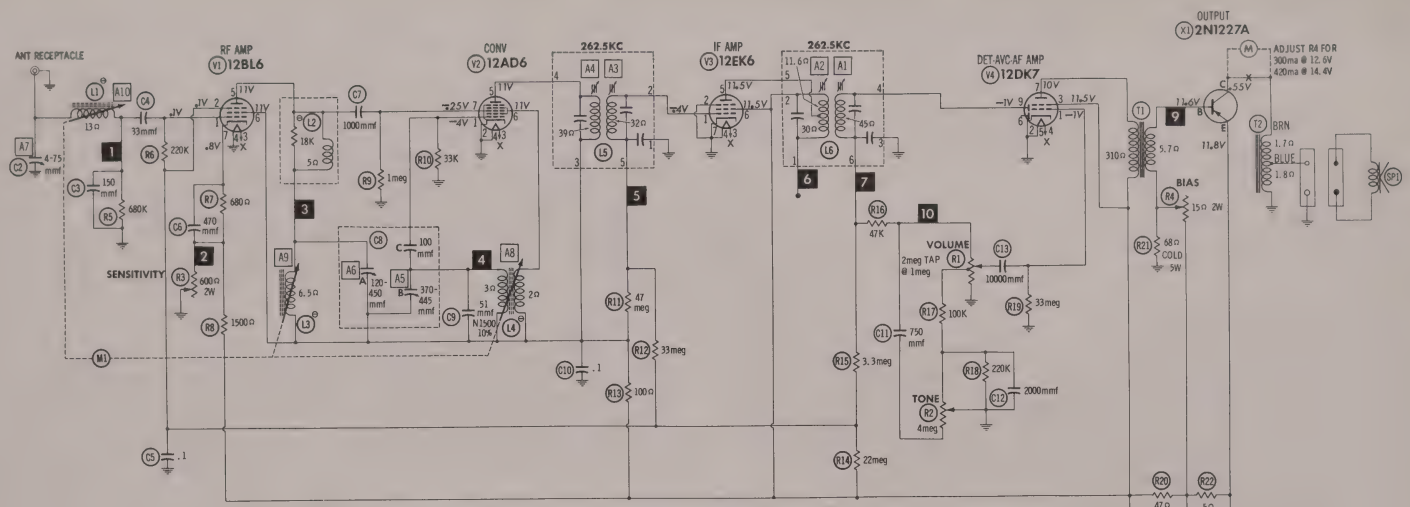
FIG. 2

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JD938

SET 500 FOLDER 9



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	4meg	3.8meg	1.7Ω	0Ω	†150Ω	†150Ω	730Ω		
V2	12AD6	33K	0Ω	1.7Ω	0Ω	†200Ω	†150Ω	1meg		
V3	12EK6	22meg	0Ω	1.7Ω	0Ω	†50Ω	†47Ω	0Ω		
V4	12DK7	33meg	0Ω	†47Ω	1.7Ω	0Ω	NC	†360Ω	NC	1.3meg

† MEASURED FROM JUNCTION OF R20 AND R22 NC NO CONNECTION

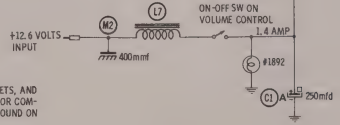
TRANSISTOR CIRCUIT RESISTANCE FOR X1 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

TERM VIEW L5

TERM VIEW L6

TRANSISTOR TERM GUIDE

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes posssible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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FORD MODEL 04BT (COTF-18805-F)

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12BL6	V3	IF Amp.	12EK6
V2	Converter	12AD6	V4	Det.-AVC-AF Amp.	12DK7

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N1227A	Out put					PNP Note 1

Note 1. When replacing, apply silicone grease to both sides of insulator.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	■250	16	220353-4	PWH2-02-05	B0045 ‡	PWP200.3		PCL-2170	
B	▲250	16							

‡ Use printed circuit adapter #55277 & 55278.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	4-75	#219083-1				462		
C3	150		1464-00015	DD-151	5W5T15	CM-19B-151M	MC236	1FM-315
C4	33		DI-33	DD-330	L10Q33	CCD-331	GP433	10TS-Q33
C5	.1 100V		P288N-1	DF-104	CUB2P1	IDP-2-104	GEM-401	2TM-P1
C6	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C7	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C8A	120-450							
B	100	#219092-1	NPO-DI 100	DTZ-100	C10T1C	CCTO-101	CNO-310	10TCC-T10
C	370-445							
C9	51 Ni500 10%	#220332-22		TCL-47		*		
C10	.1 100V		P288N-1	DF-104	CUB2P1	IDP-2-104	GEM-201	2TM-P1
C11	750		DI-750	DD-751	L10T75	CCD-751	GP375	10TS-T75
C12	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D10
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

Bendix Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg	½	2090253-3				TA26T16	Volume
	1meg Tap							
B	Shaft						DS-37	
C	Switch						US-26	
R2	4meg	1/4	2090257-2					Tone
R3	600Ω	2(WW)	2090181-2			110-600	PFL-600	Sensitivity
R4	15Ω	2(WW)	2090181-1				PFL-15	Bias

PRINTED BOARD

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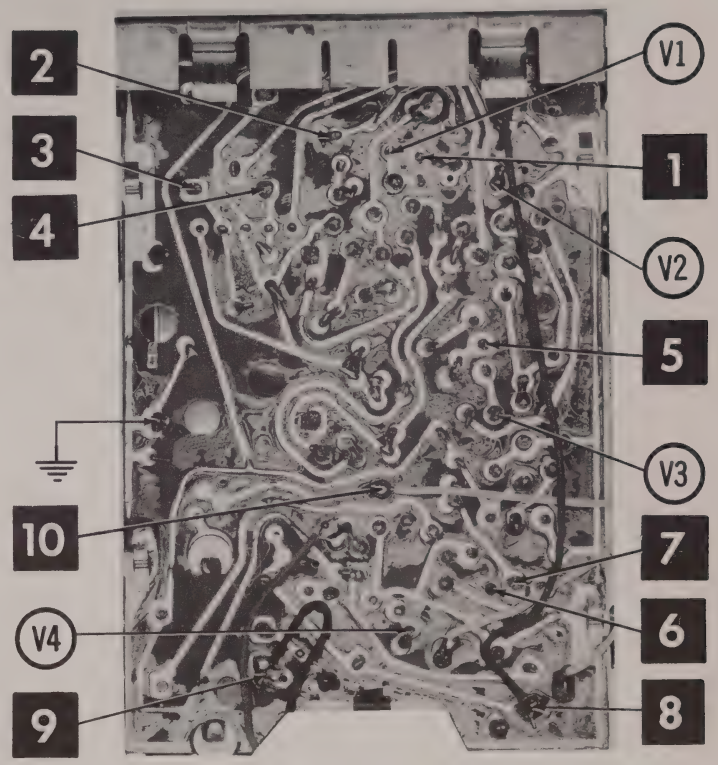
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



DRIVE CORD STRINGING

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	680K	
R6	220K	
R7	680Ω	
R8	1500Ω	
R9	1meg	
R10	33K	

ITEM No.	RATING	REMARKS
R11	47meg	
R12	33meg	
R13	100Ω	
R14	22meg	
R15	3.3meg	
R16	47K	

ITEM No.	RATING	REMARKS
R17	100K	
R18	220K	
R19	33meg	
R20	47Ω	
R21	68Ω Cold 5W	#2090574-1
R22	.5Ω	#2090438-19

Bendix Part Number.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: BENDIX PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant Coil	†						† Part of M1 Includes 18K
L2	RF Choke	2090088-1						
L3	RF Coil	†						
L4	Osc. Coil	†						
L5	Input IF Trans.	2090907-1						
L6	Output IF Trans.	2090908-2						
L7	"A" Lead Choke	216188-17						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA: BENDIX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	9	1	2090259-2						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	REPLACEMENT DATA: BENDIX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	20Ω Tap @ 8-10Ω	2090849-1							

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: BENDIX PART No.	QUAM PART No.	NOTES
SP1	5"x 7"	PM	6-8Ω	2091269-5	57A15Z8	

MISCELLANEOUS

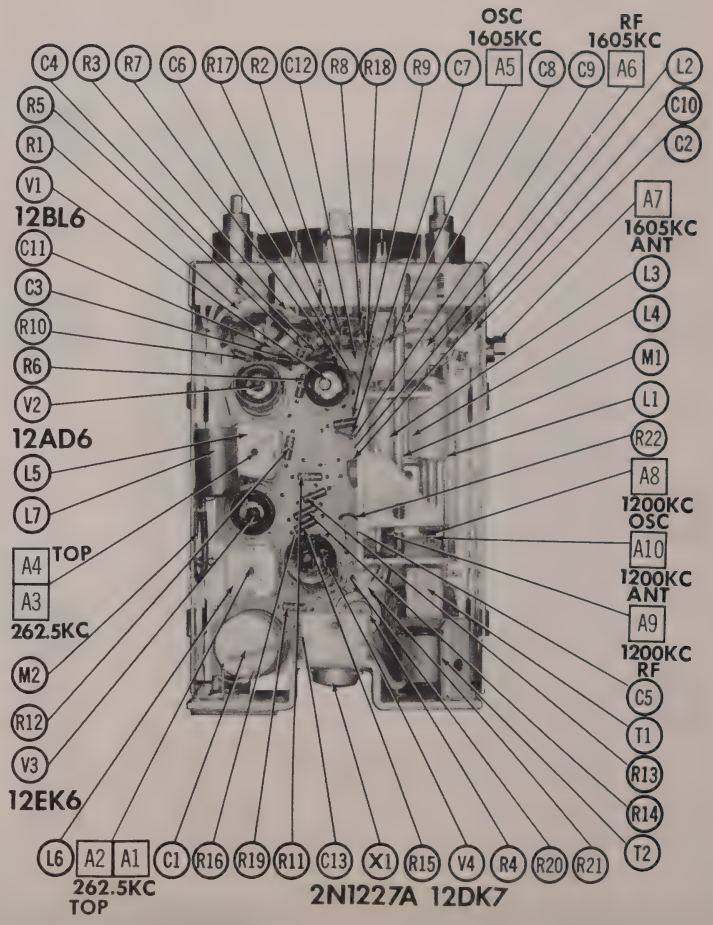
ITEM No.	PART NAME	BENDIX PART No.	NOTES
M1	Tuner	2090173-1	Complete
M2	Spark Plate	220267-10	400mmf
	Printed board	2091271-1	Less Tuner & Tubes

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

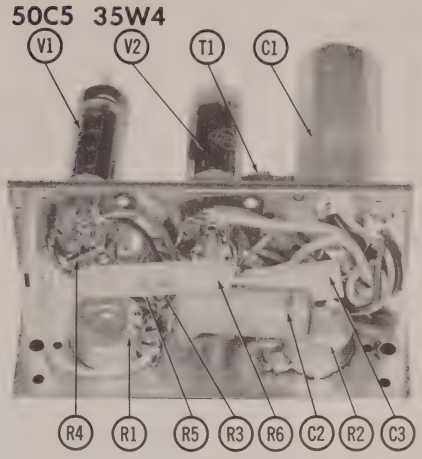
NAME	PART NO.	DESCRIPTION
Knob	2091199-1	Tuning, Volume
Knob	2090148-2	Tone
Pointer	2090169-1	
Dial	2090170-3	

CHASSIS—TOP VIEW



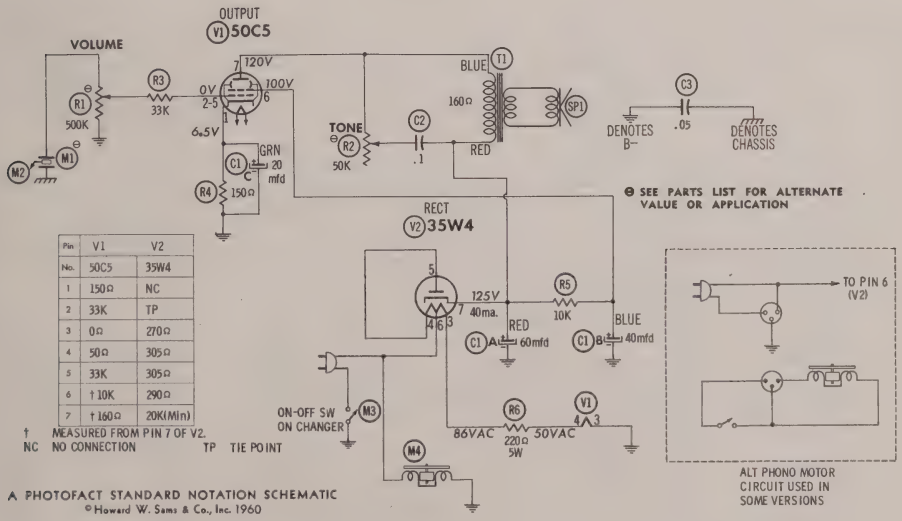
PHOTOFACT® Folder

HARMONY
MODEL 216



TRADE NAME	Harmony Model 216
MANUFACTURER	CBS Electronics, 100 Endicott Street, Danvers, Mass.
TYPE SET	AC Operated 2 Tube Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 25 Watts, .24 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE SIMILAR MONARCH UA8 — PHOTOFACT SET 381 FOLDER 11 OR RECORD CHANGER MANUAL RC-11



Pin No.	V1	V2
1	150Ω	NC
2	33K	TP
3	0Ω	270Ω
4	50Ω	305Ω
5	33K	305Ω
6	†10K	290Ω
7	†160Ω	20K(Min)

† MEASURED FROM PIN 7 OF V2.
NC NO CONNECTION TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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JS918

HARMONY
MODEL 216
HARMONY
MODEL 216
SET 500 FOLDER 10

PARTS LIST AND DESCRIPTIONS

TUBES

• CBS •	GENERAL ELECTRIC •	RAYTHEON •	SYLVANIA •

ITEM No.	USE	TYPE
V1	Output	50C5
V2	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	HARMONY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	150		PRS3800	BBRT84215	TCT3119	TDLT-7	TVA-3455	
B	40	150							
C	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C3	.05 400V		P488N-05	DD-503	CUB6S5	4DP-3-503	GEM-415	4TM-S5

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	HARMONY PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	½	9B570①	B-60	A47-500K-Z	Q13-133	U48	Volume -
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	50K	½	9B557②	B-31	A47-50K-S	Q11-123	U35	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

① Some versions may use Part #9B545.
② Some versions may use Part #9B639.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	33K	
R4	150Ω	

ITEM No.	RATING	REMARKS
R5	10K	

ITEM No.	RATING	REMARKS
R6	220Ω 5W	#16B450

Harmony Part Number.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	HARMONY PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2300Ω	3-4Ω	3B242	24S53	A-3025	AU-605	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	HARMONY PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	1B102	4A1	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA									
	HARMONY PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M1	①	420-TS-TB	N8-1 & N8-3	46		49			

① Some versions may use Part #TC8H in this application.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	HARMONY PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	
M2		W-64S † or W-64D ♦	CRA-55 † or CRA-55D ♦	† Jewel ♦ Diamond
		W-64MGS † or W-64MGD ♦	CRA-55LP † or CRA-55LPD ♦	

MISCELLANEOUS

ITEM No.	PART NAME	HARMONY PART No.	NOTES
M3	Switch		Off-On (Part of Player)
M4	Motor		Turntable (Part of Player)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	8B523	Gray, Volume & Tone
Cabinet	17B886	Gray & White

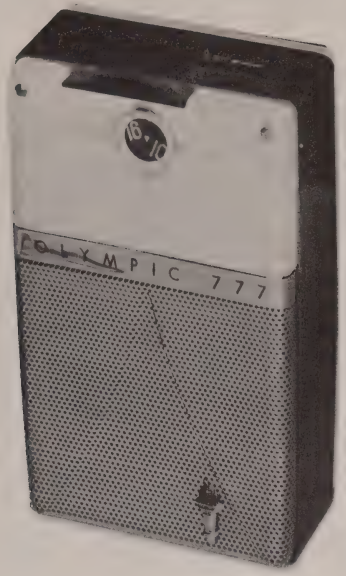
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE®

**OLYMPIC
MODEL 777**

OLYMPIC
MODEL 777



OLYMPIC
MODEL 777

TRADE NAME	Olympic Model 777
MANUFACTURER	Olympic, A Div. of The Siegler Corp., 34-01 36th Ave., Long Island City 1, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC RATING 6 MA @ 9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	540 — 1615KC 8 MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3.... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A4, A6.....GENERAL CEMENT #5000, 5003, 5066, 8271, 8272, 8276, 8277, 8290, 8609, 8722, 9150, 9298
WALSCO #2515, 2516, 2518, 2519, 2525, 2541

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	Tune to 1400KC Signal.	"	A6	Adjust for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JF935

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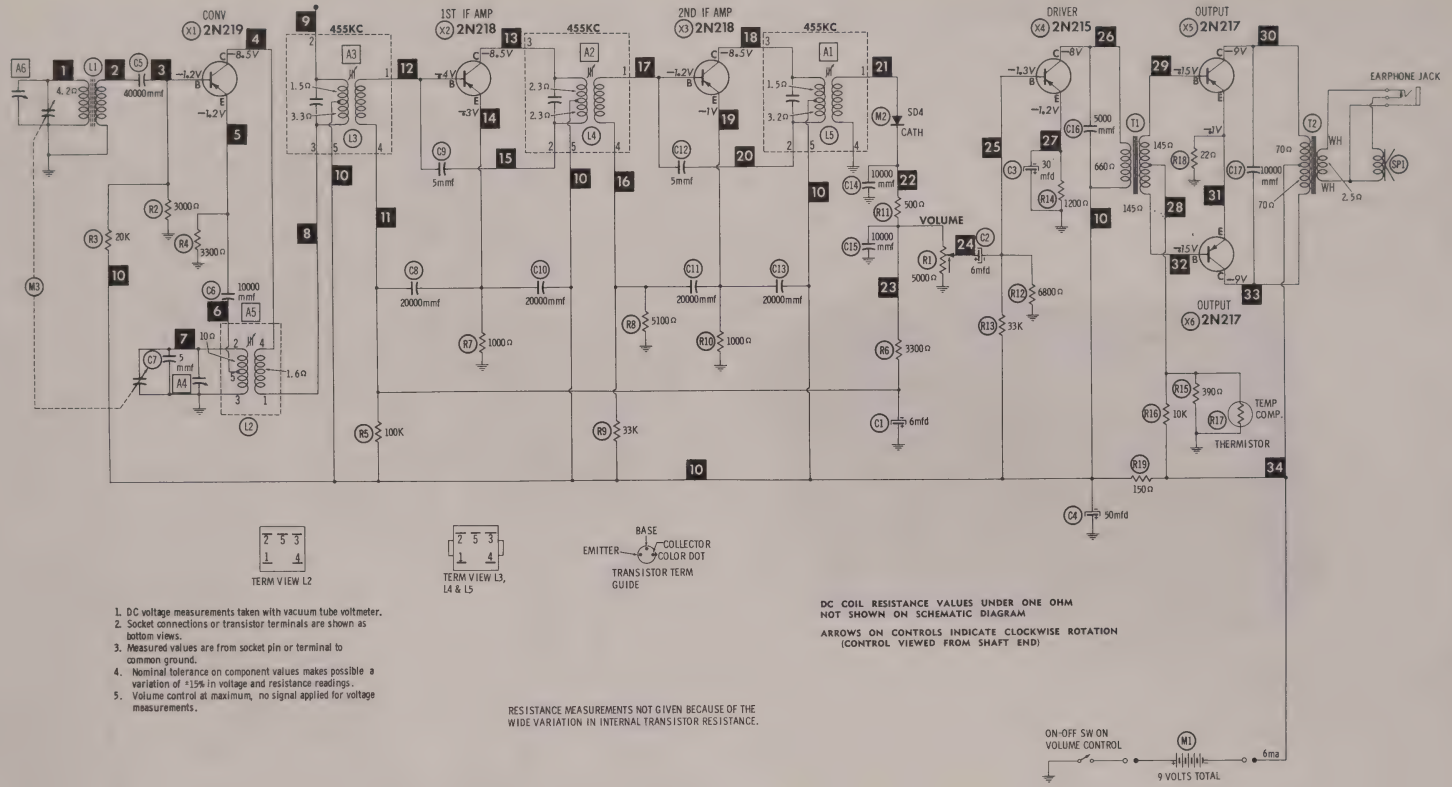

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE

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OLYMPIC MODEL 777

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N219	Converter		2N219	2N486	2N219	PNP
X2	2N218	1st IF Amplifier		2N218	2N483	2N218	PNP
X3	2N218	2nd IF Amplifier		2N218	2N483	2N218	PNP
X4	2N215	Driver		2N406	2N362	2N104	PNP
X5	2N217	Output		2N217	2N632	2N217	PNP
X6	2N217	Output		2N217	2N632	2N217	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	OLYMPIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	6	6	COJ30212	BCD6006	NLW5-6	TT10X6	ML6-6	TE-1085	
C2	6	6	COJ30212	BCD6006	NLW5-6	TT10X6	ML6-6	TE-1085	
C3	30	6	COJ30211	XPP-6030	NLW30-6	TT6X30	ML30-6	TE-1092	
C4	50	10	COJ30213	XPP-10050	NLW50-10	TT10X50		TE-1119	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	40000							
C6	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10
C7	5		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C8	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20
C9	5		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C10	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20
C11	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20
C12	5		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C13	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20
C14	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10
C15	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10
C16	5000		C80V502AM	DDM-502	H-05D5	CCD-502	TA-250	TG-D50
C17	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	OLYMPIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A B	5000Ω Switch	1/4	PTJ30209	B16-214 Not Req.				Volume Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	3000Ω	
R3	20K	
R4	3300Ω	
R5	100K	
R6	3300Ω	
R7	1000Ω	

ITEM No.	RATING	REMARKS
R8	5100Ω	
R9	33K	
R10	1000Ω	
R11	500Ω	
R12	6800Ω	
R13	33K	

ITEM No.	RATING	REMARKS
R14	1200Ω	
R15	390Ω	
R16	10K	
R17	Temp. Comp.	
R18	22Ω	
R19	150Ω	

PRINTED BOARD

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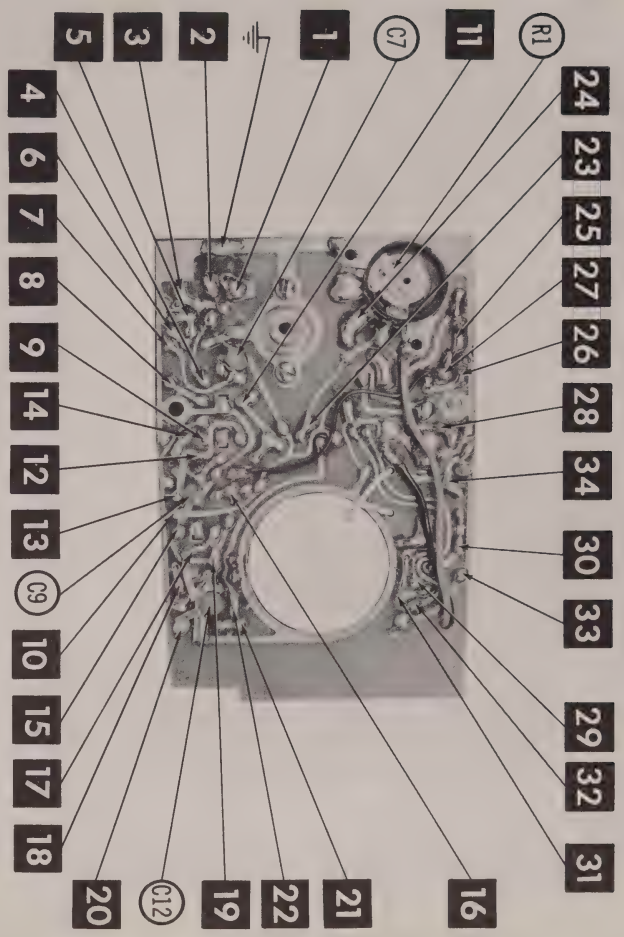


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		OLYMPIC PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	LPJ30203				
L2	Osc. Coil	CLJ30200				
L3	1st IF Trans.	TRJ30206				
L4	2nd IF Trans.	TRJ30207				
L5	3rd IF Trans.	TRJ30208				

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	OLYMPIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	TRJ30204					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	OLYMPIC PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	800Ω CT	6-8Ω	TRJ30205						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	OLYMPIC PART No.	QUAM PART No.	
SP1	2 1/4"	PM	6-8Ω	SKJ30217		

BATTERIES

ITEM No.	VOLTAGE	OLYMPIC PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			2U6		216		M-1604	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		OLYMPIC PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	SD4		1N60	1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M3	Tuning Cap.	CVJ30199	2 Gang

CABINETS & CABINET PARTS

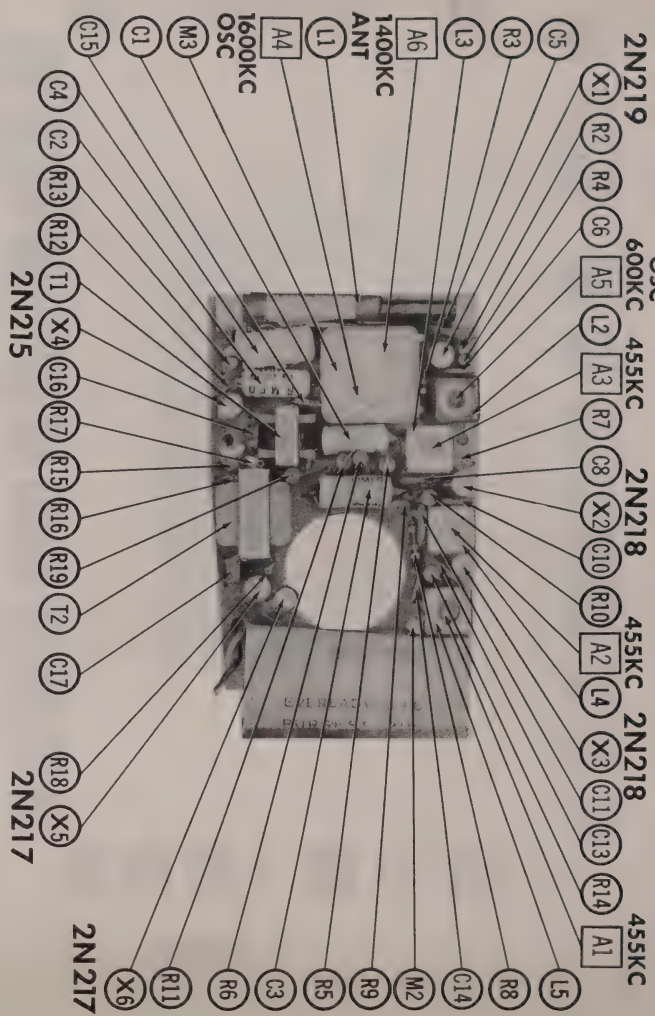
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	KNJ30201	Tuning
Knob	KNJ30210	Volume
Cabinet	CAJ30198	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

PHILCO MODEL TC-47

PHILCO MODEL TC-47

PHILCO MODEL TC-47

TRADE NAME	Philco Model TC-47
MANUFACTURER	Philco Corp., Tioga & C Streets, Philadelphia, Pa.
TYPE SET	Battery Operated Transistorized Portable AM Receiver With Clock
POWER SUPPLY	6 Volts DC (Radio) 1.5 Volts DC (Clock) RATING 22 MA @ 6 Volts DC
TUNING RANGE—BROADCAST	535 — 1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A3....GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A4, A6.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528
A5.....GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to antenna stator lug (rear section) of tuning gang. Low side to chassis.	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	Loop	1620KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	Tune to 1400KC Signal.	"	A5	"
4.	"	600KC	Tune to 600KC Signal.	"	A6	Panel must be remounted in cabinet. Adjust for maximum output. Repeat Steps 2 thru 4 until no further improvement is obtained, always stopping with Step 2.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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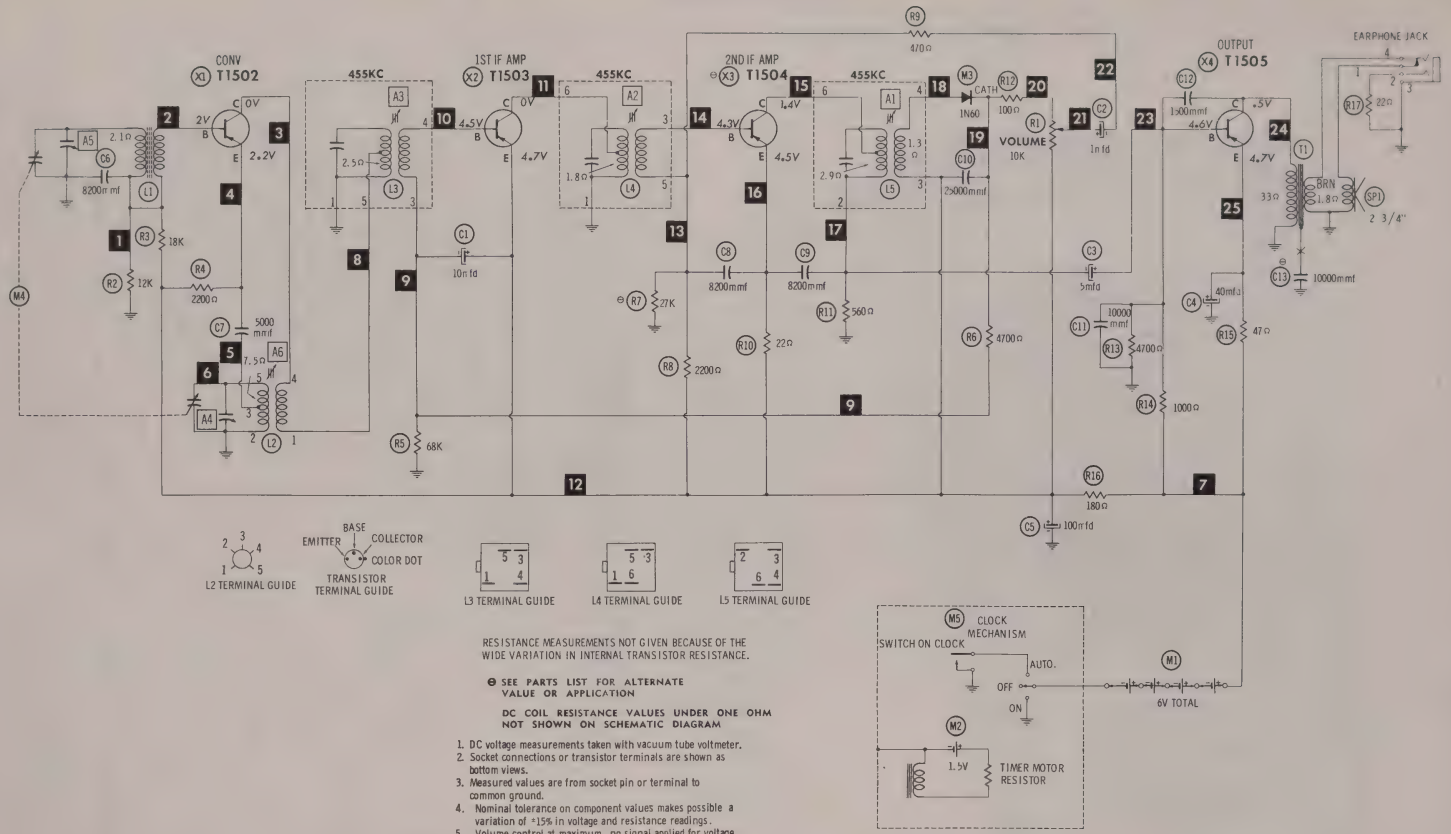
JF956

SET 500 FOLDER 12



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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PHILCO MODEL TC-47

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	T1502	Converter			2N486		PNP
X2	T1503	1st IF Amplifier			2N483		PNP
X3	T1504 *	2nd IF Amplifier			2N483		PNP
X4	T1505	Output			2N631		PNP

* Type T1542 may be used in this application. See R7 resistor note.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	10	6	30-2591-9	XPP6010	NLW10-6	TT6X10	ML10-6	TE-1087	
C2	1	6	30-2591-11	XPP-6001	NLW1-50	TT12X1	ML1-6	TE-1080	
C3	5	6	30-2591-10	XPP-6005	NLW5-6	TT6X5	ML5-6	TE-1084	
C4	40	6	30-2588-3	XPP-6040	NLW40-6	TT6X40	ML40-6	TE-1095	
C5	100	6	30-2588-4	PWE6100	NLW100-6	TT6X100	ML100-6	TE-1102	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	8200	#30-1262-1		DD-822			B-282	
C7	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C8	8200	#30-1262-1		DD-822			B-282	
C9	8200	#30-1262-1		DD-822			B-282	
C10	25000	#30-1272-11						5HK-S25
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C13	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

Philco Part Number.
Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	10K	1/4	33-5583-16					Volume

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	12K	
R3	18K	
R4	2200Ω	
R5	68K	
R6	4700Ω	
R7	27K	Note 1

ITEM No.	RATING	REMARKS
R8	2200Ω	
R9	470Ω	
R10	22Ω	
R11	560Ω	
R12	100Ω	
R13	4700Ω	

ITEM No.	RATING	REMARKS
R14	1000Ω	
R15	47Ω	
R16	180Ω	
R17	22Ω	

Note 1. Value may vary between 18K and 33K. When replacing X3, use value necessary for X3 collector to draw 2MA. (Measure 1.12V ± 10% across R11).

PRINTED BOARD

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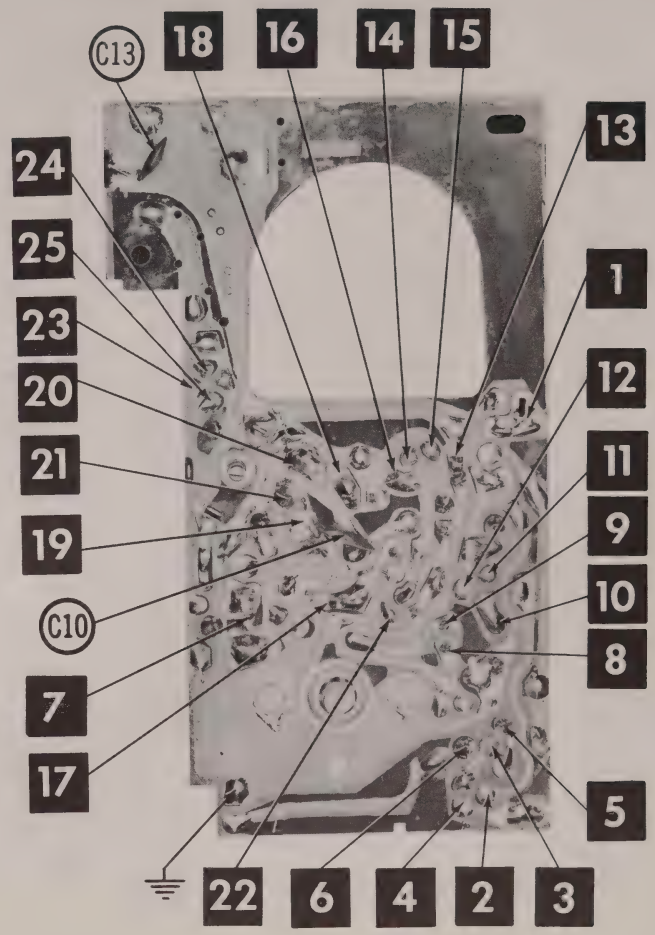


PHILCO
MODEL TC-47

FOLDER 12

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		PHILCO PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	32-4761-2				
L2	Osc. Coil	32-4669-7				
L3	1st IF Trans.	32-4708-12				
L4	2nd IF Trans.	32-4708-13				
L5	3rd IF Trans.	32-4708-14				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	PHILCO PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	95Ω	12-14Ω	32-8819-3						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	QUAM PART No.	
SP1	2 3/4"	PM	12-14Ω	36-1664-7	27A06Z12	

BATTERIES

ITEM No.	VOLTAGE	PHILCO PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1 M2	1.5V 1.5V	P-15 * ♦		930 * 230 ♦		1015 * A100 ♦		M-15R * M-13R ♦	* 4 Required (Radio) ♦ 1 Required (Clock)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		PHILCO PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M3	1N60	34-8022-3	1N60	1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

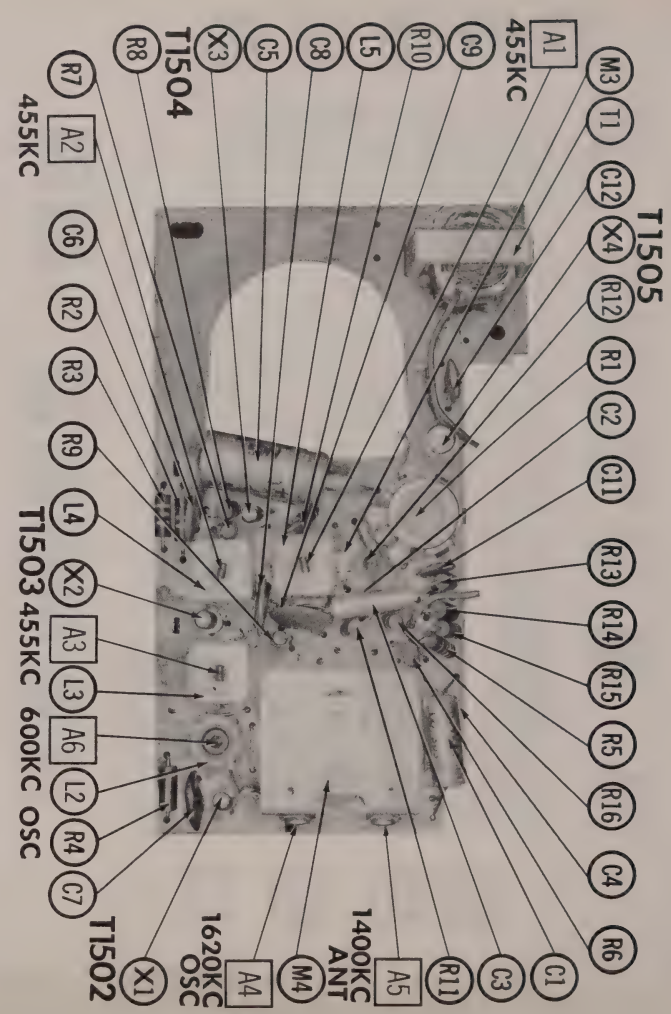
ITEM No.	PART NAME	PHILCO PART No.	NOTES
M4	Tuning Cap.	31-2788-2	2 Gang
M5	Clock	41-2073-1	Includes Switch and Resistor
	Printed Panel	54-6962	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	54-6624-16	Tuning
Knob	54-6660-2	Volume
Knob	54-5428-1	Timer
Cabinet	51-0056-2	White
Cabinet	51-0056-1	Brown
Cabinet Front	54-6979-2	Brown
Glass	54-5425	Clock
Dial	28-12736-1	Clock

CHASSIS—TOP VIEW



PHOTOFACT® Folder

RCA VICTOR MODELS KS13, KS19, PM19, PM22, PR21, RK256, STA2, TPM13 (Ch. RC1192, A, RS171D, F)

RCA VICTOR MODELS KS13, KS19, PM19, PM22, PR21, RK256, STA2, TPM13 (Ch. RC1192, A, RS171D, F)

MODEL KS13

MODEL TPM13

RCA VICTOR MODELS KS13, KS19, PM19, PM22, PR21, RK256, STA2, TPM13 (Ch. RC1192, A, RS171D, F)

TRADE NAME	RCA Victor Models PM19, PM22, PR21 (Amp. Ch. RS-171D or RS-171F) STA2 (Tuner Ch. RC-1192A) TPM13 (Tuner Ch. RC-1192 and Amp. Ch. RS-171D or RS-171F) KS13, KS19 (External Speaker Units) RK256 (Remote Control Unit)		
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N.J.		
TYPE SET	AC Operated 8 Tube FM-AM Tuner, 6 Tube Stereo Amplifier and 4 Speed Automatic Record Changer		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING	25 Watts, .33 Amp. @ 117 Volts AC (Tuner) 100 Watts, .82 Amp. @ 117 Volts AC (Amp.)
TUNING RANGE—BROADCAST	540 - 1600KC	FREQ. MOD.	88 - 108MC

FOR SERVICE INFORMATION ON RECORD CHANGERS — SEE RCA RP-211 SERIES — PHOTOFACT SET 475 FOLDER 7

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JN847

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AM ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.

Use only enough sweep generator output to provide a usable pattern on scope.

Suggested Alignment Tools:

A1 thru A4, A8 thru A10... GENERAL CEMENT #5097, 8727
WALSCO #2515

A5, A6..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

A7..... GENERAL CEMENT #8721, 8722
WALSCO #2519

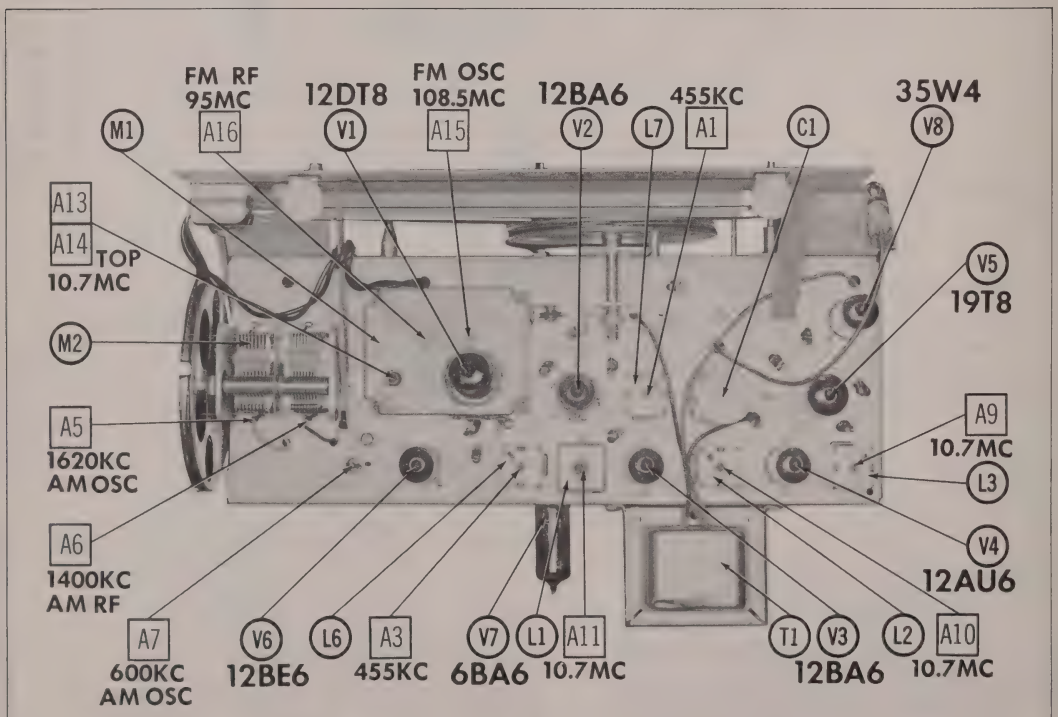
A11, A12..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

A13, A14..... GENERAL CEMENT #8282, 8606, 8606-L, 9091
WALSCO #2526, 2541, 2542, 2543, 2544

A15, A16..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

AM ALIGNMENT—SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of AM Converter. Low side to chassis	455KC (400~ Mod.)	(AM) Tuning gang fully open.	AC probe to point (A). Common to chassis.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	Tune to 1400KC Signal.	"	A6	"
4.	"	600KC	Tune to 600KC Signal.	"	A7	Adjust for maximum deflection while rocking tuning gang. Repeat Steps 3 and 4.



TUNER CHASSIS—TOP VIEW

FM ALIGNMENT INSTRUCTIONS

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .01mfd to pin 1 (grid) of FM Limiter. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	DC probe thru 1meg to point Ⓑ. Common to chassis.	A8	Adjust for maximum deflection.
6.	"	"	"	DC probe to point Ⓒ. Common to chassis.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
7.	High side thru .01mfd to pin 1 (grid) of 2nd FM IF Amp. Low side to chassis.	"	"	DC probe thru 270K to pin 1 (grid) of FM Limiter. Common to chassis.	A10	Adjust for maximum deflection.
8.	High side thru .01mfd to pin 1 (grid) of 1st FM IF Amp. Low side to chassis.	"	"	"	A11, A12	Adjust for maximum deflection. Connect 270Ω resistor across winding not being adjusted.
9.	Across FM antenna terminals with 270Ω in high side.	"	"	"	A13, A14	Adjust for maximum deflection. Connect 470Ω resistor across winding not being adjusted.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .01mfd to pin 1 (grid) of FM Limiter. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. Amp. thru 27K to point Ⓑ. Low side to chassis.	A8	Adjust for maximum gain and symmetry of response similar to Fig. 1.
6.	"	"	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A9	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of cross-over lines.
7.	High side thru .01mfd to pin 1 (grid) of 2nd FM IF Amp. Low side to chassis.	"	"	Vert. Amp. to pin 1 (grid) of FM Limiter. Low side to chassis.	A10	Adjust for maximum gain and symmetry of response.
8.	High side thru .01mfd to pin 1 (grid) of 1st FM IF Amp. Low side to chassis.	"	"	"	A11, A12	Adjust for maximum gain and symmetry of response. Connect 270Ω across winding not being adjusted.
9.	Across FM antenna terminals with 270Ω in high side.	"	"	"	A13, A14	Adjust for maximum gain and symmetry of response. Connect 470Ω across winding not being adjusted.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
10.	Across FM Antenna terminals with 270Ω in high side.	87.5MC	(FM) Tuning knob fully counter-clockwise.	DC probe thru 270K to pin 1 (grid) of FM Limiter. Common to chassis.	FM Tuner String Drive Collar	Adjust Drive Collar for maximum deflection and tighten set screws.
11.	"	108.5MC	(FM) Tuning knob fully clockwise.	"	A15	Adjust for maximum deflection.
12.	"	95MC	Tune to 95MC signal.	"	A16	"

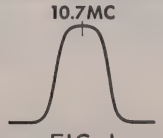


FIG. 1

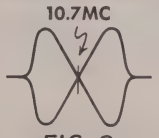
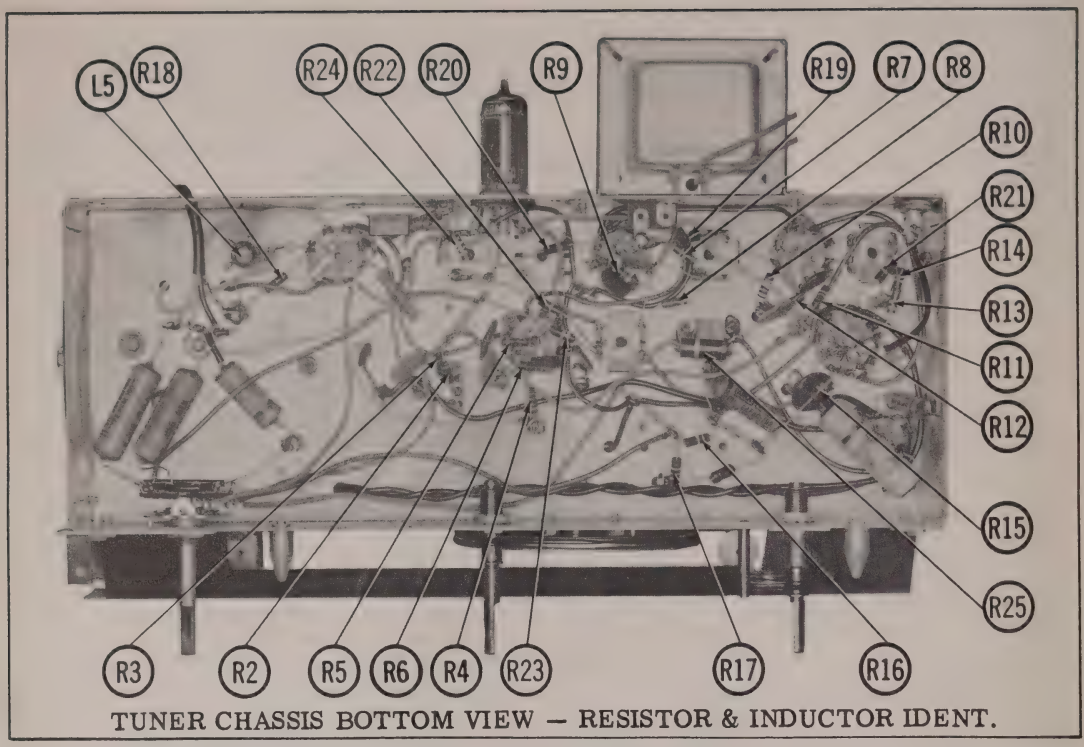
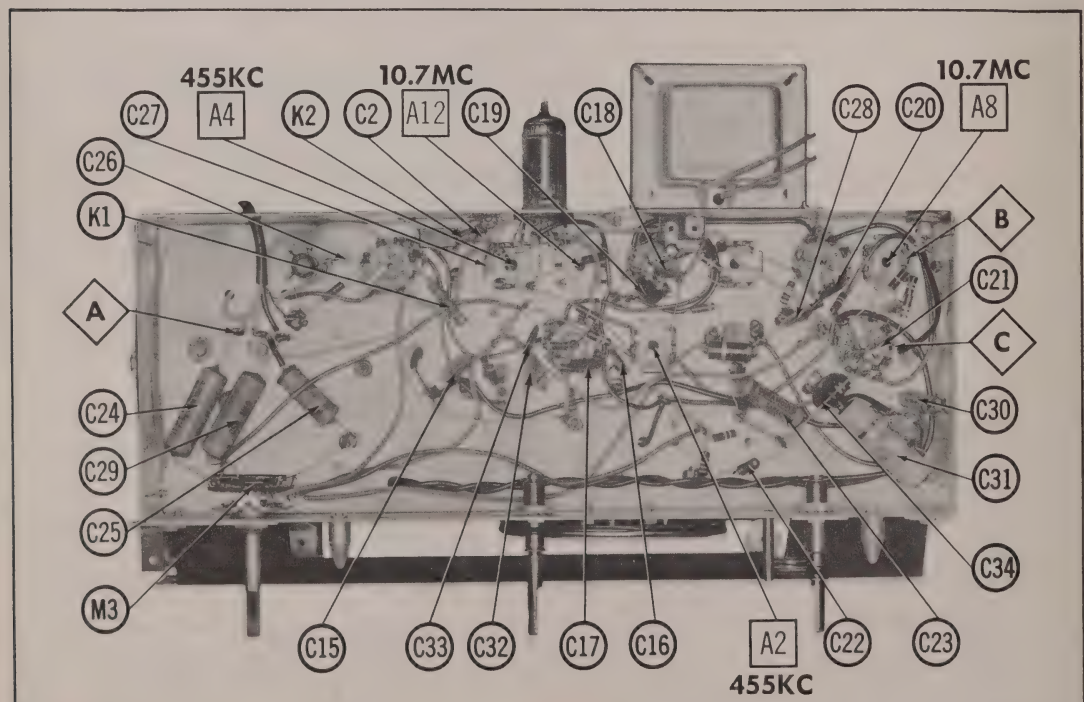


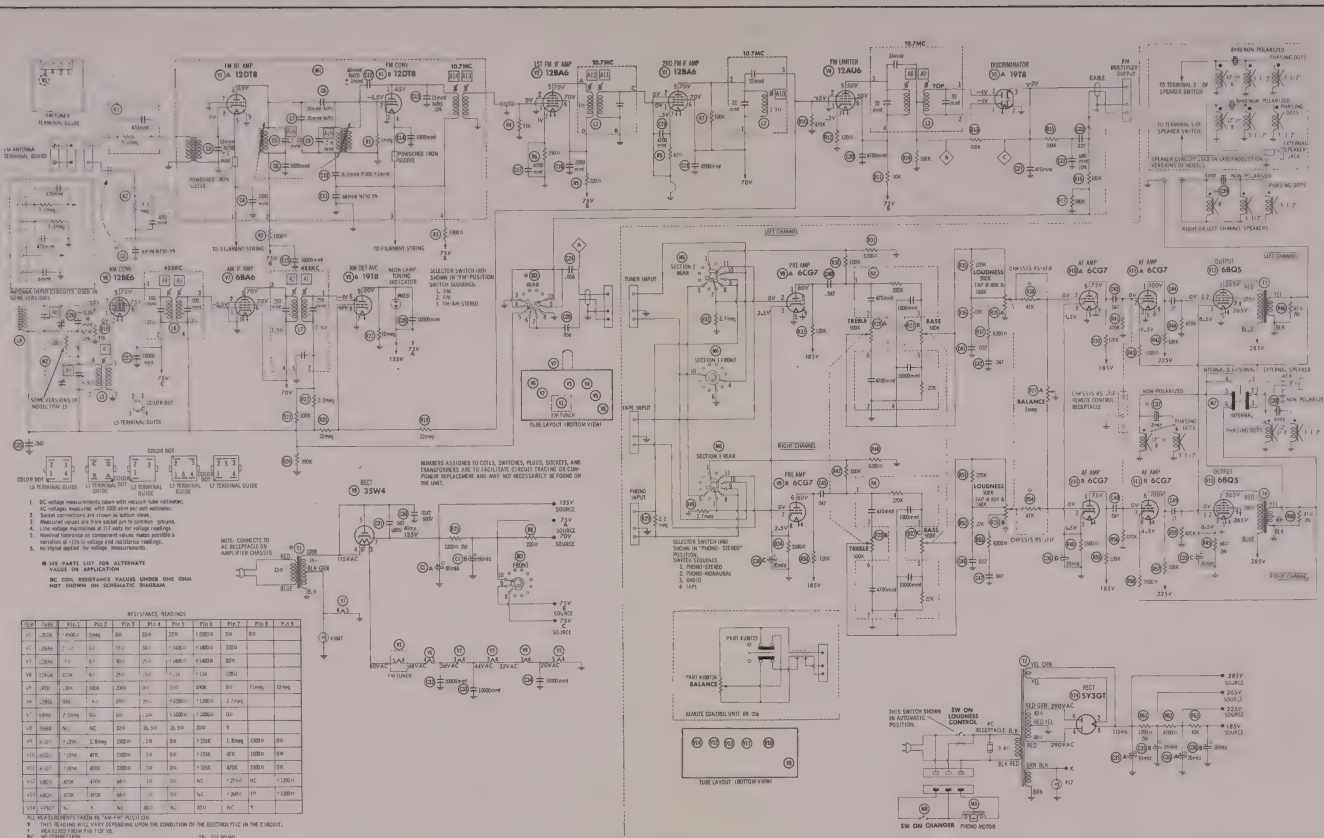
FIG. 2



TUNER CHASSIS BOTTOM VIEW — RESISTOR & INDUCTOR IDENT.



TUNER CHASSIS BOTTOM VIEW — ALIGNMENT, CAPACITOR & MISC. IDENT.



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohms per volt voltmeter.
2. Socket connections are shown as bottom view.
3. Measured values are from socket pin to chassis ground.
4. Tolerance of resistors is ±10% for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. No signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9
V1	12DT8	1 MEG	1 meg	0Ω	25Ω	25Ω	1.2KΩ	0Ω	0Ω	
V2	12BA6	1.2K	1K	1KΩ	38Ω	1.4KΩ	1.4KΩ	38Ω		
V3	12BA6	1K	1K	1KΩ	25Ω	1.4KΩ	1.4KΩ	82Ω		
V4	12AU6	470K	1K	2KΩ	1.5K	1.5K	120K	120Ω		
V5	1978	1.2M	180K	120K	2M	1M	490K	0Ω	1.1meg	1.1meg
V6	12BE6	33K	1K	1KΩ	3M	3M	1250Ω	1.2KΩ	2.7meg	
V7	6BA6	2.7meg	0Ω	0Ω	330	1.4KΩ	1.4KΩ	0Ω		
V8	1978	NC	NC	2KΩ	16.5Ω	16.5Ω	2KΩ	1		
V9	6CG7	1.2Meg	1.8meg	120KΩ	1Ω	0Ω	125KΩ	1.8meg	120KΩ	0Ω
V10	6CG7	1.2Meg	421K	120KΩ	1Ω	0Ω	125KΩ	421K	120KΩ	0Ω
V11	6CG7	1.2Meg	421K	120KΩ	1Ω	0Ω	125K	421K	120KΩ	0Ω
V12	6BQ5	470K	470K	0Ω	1Ω	0Ω	NC	270Ω	NC	1.2KΩ
V13	6BQ5	470K	470K	0Ω	1Ω	0Ω	NC	1.2KΩ	1●	1.2KΩ
V14	5Y3GT	NC	1	NC	0Ω	NC	0Ω	NC	1	

ALL MEASUREMENTS TAKEN IN "FM-FM" POSITION
1 THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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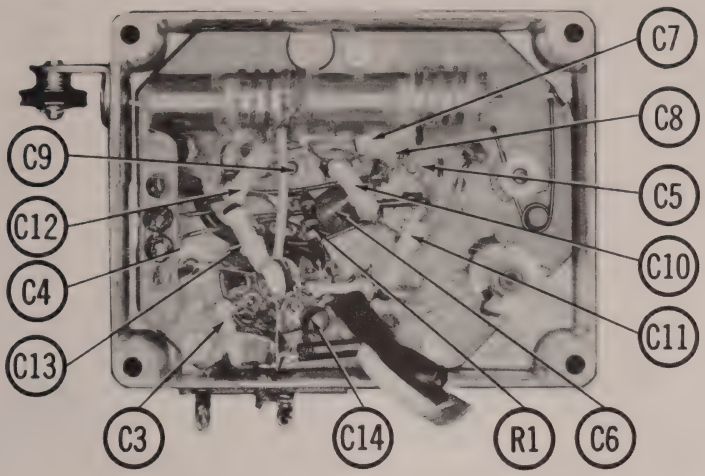
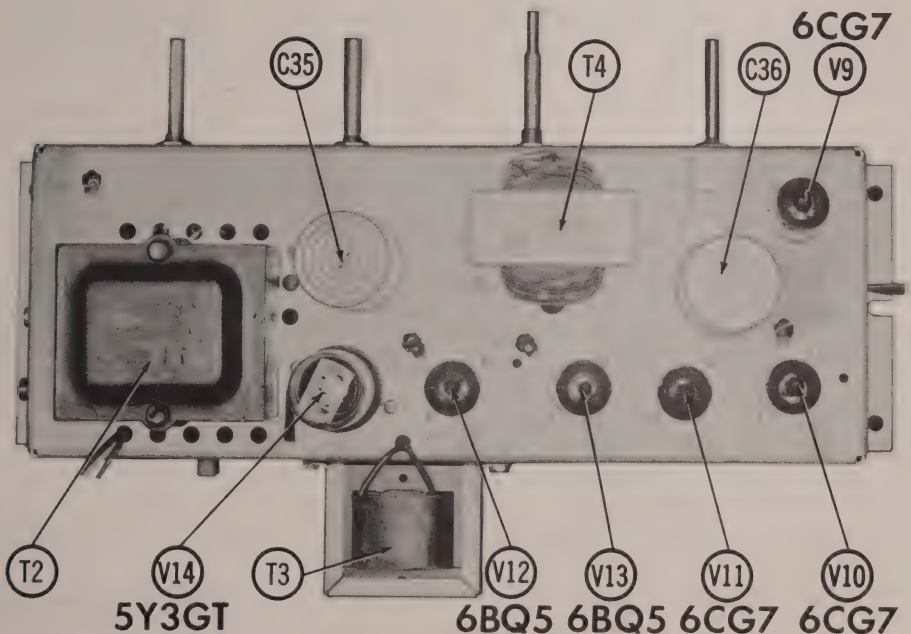
RCA VICTOR MODELS KS13, KS19, PM19, PM22, PR21, RK256, STA2, TPM13 (Ch. RC1192, A, RS171D, F)



FM RF SUBCHASSIS



AMP. CHASSIS – TOP VIEW

TUNER PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	FM RF Amplifier-FM Converter	12DT8
V2	1st FM IF Amplifier	12BA6
V3	2nd FM IF Amplifier	12BA6
V4	FM Limiter	12AU6
V5	Discriminator-AM Det.-AVC	19T8
V6	AM Converter	12BE6
V7	AM IF Amplifier	6BA6
V8	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA RCA VICTOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■80	150	73520	AFH2-19	XB0181	FP216	TMD-17	TVL-2442.1	
B	▲50	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	6 N750 5%	Note 1						
C3	10 N750 ± 1mmf		N750-SI 10	TCN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C4	1000		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10 *
C5	2-10							
C6	1000		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C7	20 NPO		NPO-SI 20	TCZ-20	C10Q2C	CCTO-200	CNO-420	10TCC-Q20
C8	20 NPO		NPO-SI 20	TCZ-20	C10Q2C	CCTO-200	CNO-420	10TCC-Q20
C9	2-6							
C10	8.2 P100 ± 1mmf							
C11	68 N750 5%			TCN-68	C10Q68U		CN7-468	10TCU-Q68
C12	10 N470 ± 1mmf					*		
C13	15 NPO 10%		NPO-SI 15	TCZ-15	C10Q15U	CCTO-150	CNO-415	10TCC-Q15
C14	1000		BPD-001	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C15	10000		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C16	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C17	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C18	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C19	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C20	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C21	470		SI 470	D6-471	BYA10T47	CCD-471	B-347	10TS-T47
C22	680 10%			D6-681	1R5T68	CCD-681	GP368	10TS-T68
C23	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C24	.056 200V		P684CM-057			4DP-3-563	GEM-6156	2WF-S56
C25	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C26	56 N750 10%		N750-SI 56	TCN-56	C10Q56U	CCTN-560	CN7-456	10TCU-Q56
C27	10000		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C28	10000		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C29	.056 200V		P684CM-057			4DP-3-563	GEM-6156	2WF-S56
C30	.0047 600V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C31	.047 600V		P688N-047	DD-503	CUB4S47	6DP-3-473	GEM-4147	6TM-S47
C32	10000		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C33	10000		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C34	10000		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10

Note 1. Not used in some versions.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R1	1meg	
R2	1000Ω	
R3	3300Ω	
R4	33K	
R5	220Ω	
R6	150Ω	
R7	100K	
R8	220Ω	
R9	82Ω	
R10	470K	
R11	10K	
R12	120Ω	
R13	100K	
R14	100K	
R15	100K	
R16	100K	
R17	390K	
R18	33K	
R19	22meg	
R20	22meg	
R21	10meg	
R22	2.2meg	
R23	100K	
R24	390K	
R25	1200Ω 2W	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	RCA VICTOR PART No.	REPLACEMENT DATA
K1	FM Antenna Filter	470mmf, .3-1meg	104328	Centralab RC-471 Sprague AC1-1
K2	FM Antenna Filter	470mmf, .3-1meg	104328 *	Centralab RC-471 Sprague AC1-1

* When C2 is omitted, K2 Part #108673 is used (6mmf, .3-1meg).
K2 is not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA RCA VICTOR PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	2nd FM IF Trans.	77513		1451		
L2	3rd FM IF Trans.	77512				
L3	Discriminator	77511	FM-253	1464		
L4	Loopstick	108411	BC-418	705-A		
L5	AM Osc. Coil	79057	BC-393	71-OSC		
L6	1st AM IF Trans.	77416	BC-352	12-C1	RF-1	
L7	2nd AM IF Trans.	76328	BC-355	12-C6		

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	REPLACEMENT DATA RCA VICTOR PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V@ .34A	115V@.220A Tap@6.3V @.45A	104609 ①						

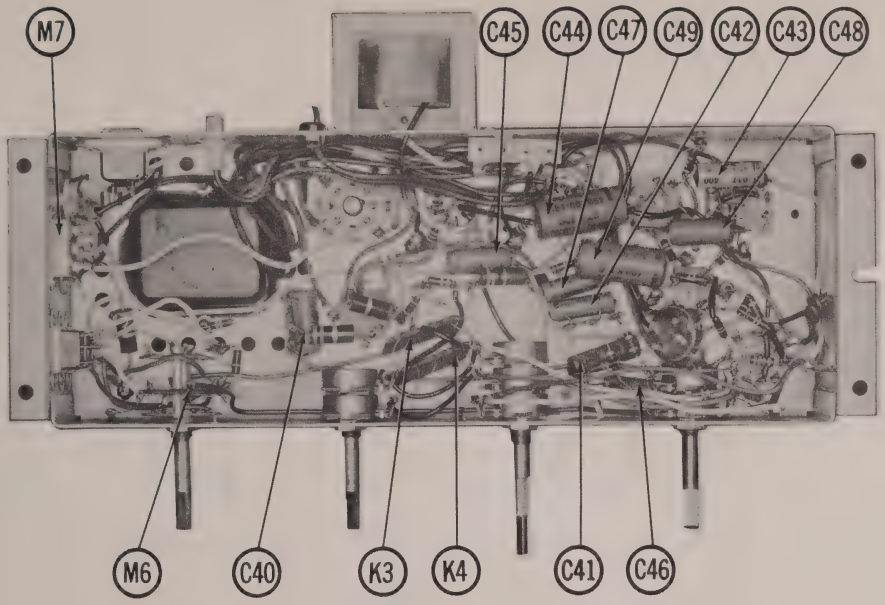
① Part #104669 used in Chassis RC-1192A.

MISCELLANEOUS

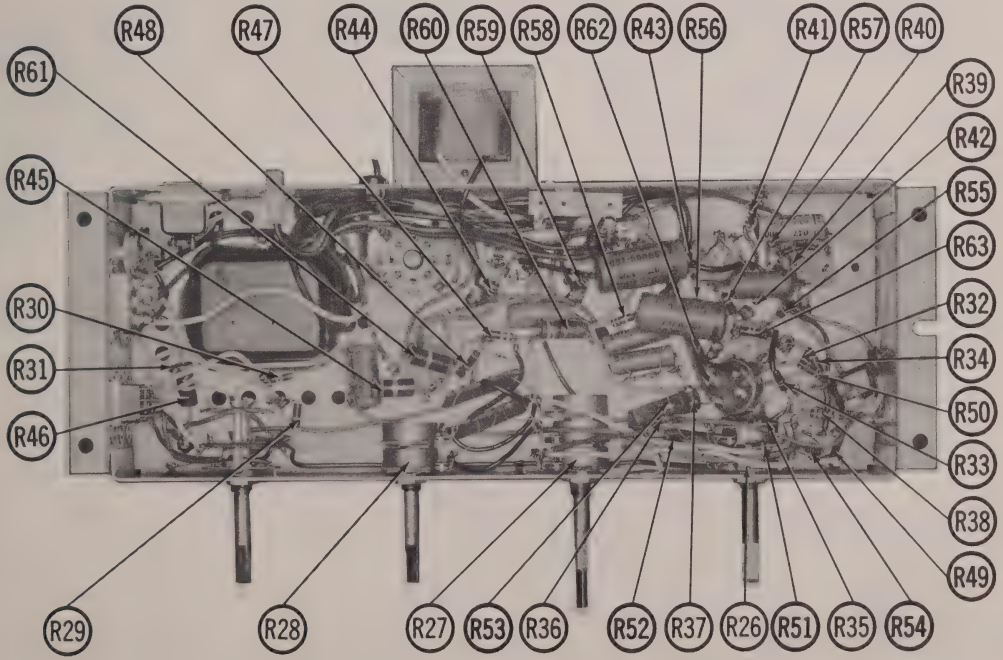
ITEM No.	PART NAME	RCA VICTOR PART No.	NOTES
M1	Tuner	107004	FM, Complete, Less Tube
M2	Tuning Cap.	108407	AM, 2 Gang
M3	Switch	108408	Function (Rotary Wafer Type) Ch. RC-1192
	Switch	108825	Function (Rotary Wafer Type) Ch. RC-1192A

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



AMP CHASSIS BOTTOM VIEW – CAPACITOR & MISC. IDENT.



AMP CHASSIS BOTTOM VIEW – RESISTOR IDENT.

AMP PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆)
V9	Left Channel AF Amp. - Right Channel AF Amp.	6CG7
V10	Left Channel AF Amp. - Right Channel AF Amp.	6CG7
V11	Left Channel AF Amp. - Right Channel AF Amp.	6CG7
V12	Left Channel Output	6BQ5
V13	Right Channel Output	6BQ5
V14	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA RCA VICTOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C35A	▲35	400	105765	AFH3-133	D0663	FP447	TMT-133	TVL-4737	
B	■35	400							
C	▲20	25							
C36A	▲20	400	106210	AFH4-57	D0520	FP430.97	TMQ-73	TVL-4667	
B	■20	400							
C	▲20	25							
D	20	25							
C37	4	10NP	106353	NP-PRS7405	BBR4-150	TCN504		TVANS-1150 *	Note 1
C38	4	10NP	106353	NP-PRS7405	BBR4-150	TCN504		TVANS-1150 *	Note 1
C39	8	10NP	100509	PRS-AC6200	BBR8-150	TCN108		TVANS-1112 *	Note 2

Note 1. Models TPM13, PM19, PM22, PR21 only. Late versions use 8mfd.
Note 2. Models KS13, KS19 only.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C40	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C41	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C42	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C43	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C44	.27 400V		P488N-25		CUB4P25	4DP-5-274	GEM-6027	4TM-P25
C45	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C46	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C47	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C48	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C49	.27 400V		P488N-25		CUB4P25	4DP-5-274	GEM-6027	4TM-P25

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA VICTOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R26A	500K *		108470					Loudness, Right Channel
B	500K *							Loudness, Left Channel
C	Switch							Power On-Off
R27A	1meg		108469					Balance
B	500K							Bass, Right Channel
C	500K							Bass, Left Channel
R28A	500K		108471	B-617	AD47-500K-S		FB55L	Treble, Right Channel
B	500K			SR-617	Not Req.		RU55L	Treble, Left Channel
C	Shaft			Not Req.	FS-3		CS3500	

* Taps ⓐ 80K & 160K.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R29	2.2meg	
R30	100K	
R31	8200Ω	
R32	2.7meg	
R33	120K	
R34	1500Ω	
R35	220K	
R36	22K	
R37	8200Ω	
R38	47K	Note 1
R39	120K	
R40	1500Ω	

ITEM No.	RATING	REMARKS
R41	470K	
R42	100K	
R43	3300Ω	
R44	470K	
R45	68Ω 2W	
R46	47Ω 2W	
R47	100K	
R48	8200Ω	
R49	2.7meg	
R50	120K	
R51	220K	
R52	22K	

ITEM No.	RATING	REMARKS
R53	8200Ω	
R54	47K	Note 1
R55	120K	
R56	470K	
R57	100K	
R58	3300Ω	
R59	470K	
R60	47Ω 2W	
R61	1200Ω 2W	
R62	4700Ω	
R63	10K	

Note 1. Not used in Chassis RS-171F.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	RCA VICTOR PART No.	REPLACEMENT DATA
K3	Tone Comp.	470mmf, 1000mmf, 4700mmf, 10000mmf, 22K, 220K	106457	Sprague TC-13
K4	Tone Comp.	470mmf, 1000mmf, 4700mmf, 10000mmf, 22K, 220K	106457	Sprague TC-13

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	RATING SEC. 4	RATING SEC. 5	REPLACEMENT DATA RCA VICTOR PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	117V ⓐ .82A	580 VCT ⓐ .115A	5V ⓐ 2A	6.3V ⓐ 3.5A			108489						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA RCA VICTOR PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T3	7500Ω	6-8Ω	108472	A-2902 ①	AU-609	A-3849 ①	24S92	S-57Z	
T4	7500Ω	6-8Ω CT	108472				22S88		

① Drill New Mounting Hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA RCA VICTOR PART No.	QUAM PART No.	NOTES
SP1	12"	PM	3-4Ω	106702	12A1	Representative speakers. See schematic for type and quantity used.
SP2	8"	PM	3-4Ω	76597	8A2i	
SP3	3½"	PM	6-8Ω	105395	3A15TZ4.9	

AMP PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA								
	RCA VICTOR PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M4	106960A	13TB	Not. Req.	26S	S1-1 S3-3			8TA4-S	N-8TA-S

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA		REMARKS
	RCA VICTOR PART No.	JENSEN PART No.	
M5	108215 †♦	S-69X † or S-69XSD †♦ or S-69XDD ♦	† Jewel ♦ Diamond

MISCELLANEOUS

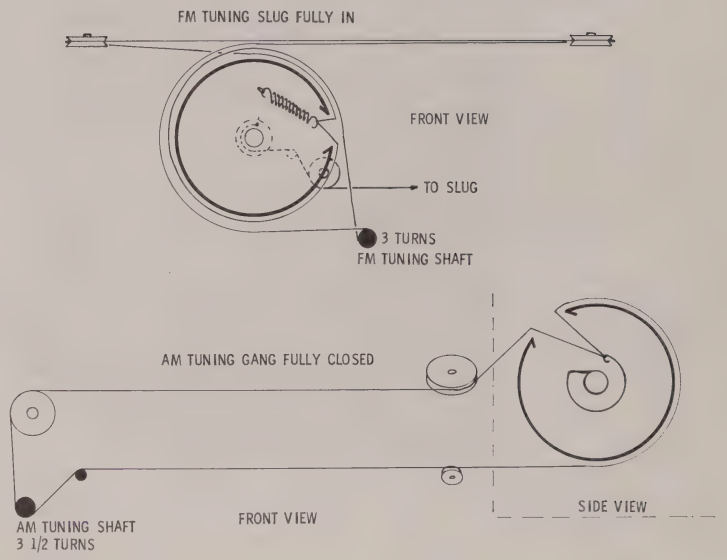
ITEM No.	PART NAME	RCA VICTOR PART No.	NOTES
M6	Switch	108468	Function (Rotary Wafer Type) Ch. RS-171D
M7	Switch	46760	Speaker Selector (DPDT, Slide Type)
M8	Switch	108457	Changer Off-On (Part of Changer)
M9	Motor		Turntable Drive (Part of Changer)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	108509	FM-AM Tuning, Model TPM-13, STA-2
Knob	108746	Loudness, Models TPM-13, PM-19, PR-21, PM-22
Knob	108479	Bass, Models TPM-13, PM-19, PR-21, PM-22
Knob	108478	Treble, FM & AM Selector, TPM-13, PM-19, PR-21, PM-22 & Function for
Knob	108477	Balance, Model TPM-13, PM-19, PR-21, & PM-22 Model STA-2
Knob	108480	Function Selector, TPM-13, PM-19, PR-21 & PM-22
Pointer	108414	AM Tuning
Pointer	108413	FM Tuning
Cabinet	X4692	Model STA-2, Oak
Cabinet	X4691	Model STA-2, Walnut
Cabinet	X4645	Model PM-19, Mahogany
Cabinet	X4690	Model STA-2, Mahogany
Cabinet	X4646	Model PM-19, Cherry
Cabinet	X4694	Model STA-2, Cherry
Cabinet	X4647	Model PM-19, Maple
Cabinet	X4693	Model STA-2, Maple
Cabinet Lid	V5117	Model PM-19, Mahogany
Cabinet Lid	X5118	Model PM-19, Cherry
Cabinet Lid	X5119	Model PM-19, Maple
Cabinet Lid	X5109	Model TPM-13, PM-22, Mahogany
Cabinet Lid	X5107	Model TPM-13, PM-22, Oak
Cabinet Lid	X5108	Model TPM-13, PM-22, Walnut
Cabinet Leg	Y7089	Model TPM-13, PM-22, Mahogany
Cabinet Leg	Y7091	Model TPM-13, PM-22, Oak
Cabinet Leg	Y7090	Model TPM-13, PM-22, Walnut
Cabinet Leg	Z3796	Model PR-21

DIAL CORD STRINGING



RCA VICTOR MODELS K513, K519, PM19, PM22, PR21, RK256, STA2, TPM13 (Ch. RC1192, A, R517D, F)

PHOTOFACT® Folder

**REALISTIC
MODEL AF-15**

REALISTIC
MODEL AF-15

REALISTIC
MODEL AF-15

TRADE NAME	Realistic Model AF-15
SUPPLIER	Radio Shack Corp., 730 Commonwealth Ave., Boston 17, Mass.
TYPE SET	AC Operated 6 Tube Audio Amplifier
POWER SUPPLY	105 - 120 Volts AC, 60 Cycles RATING 68 Watts, .66 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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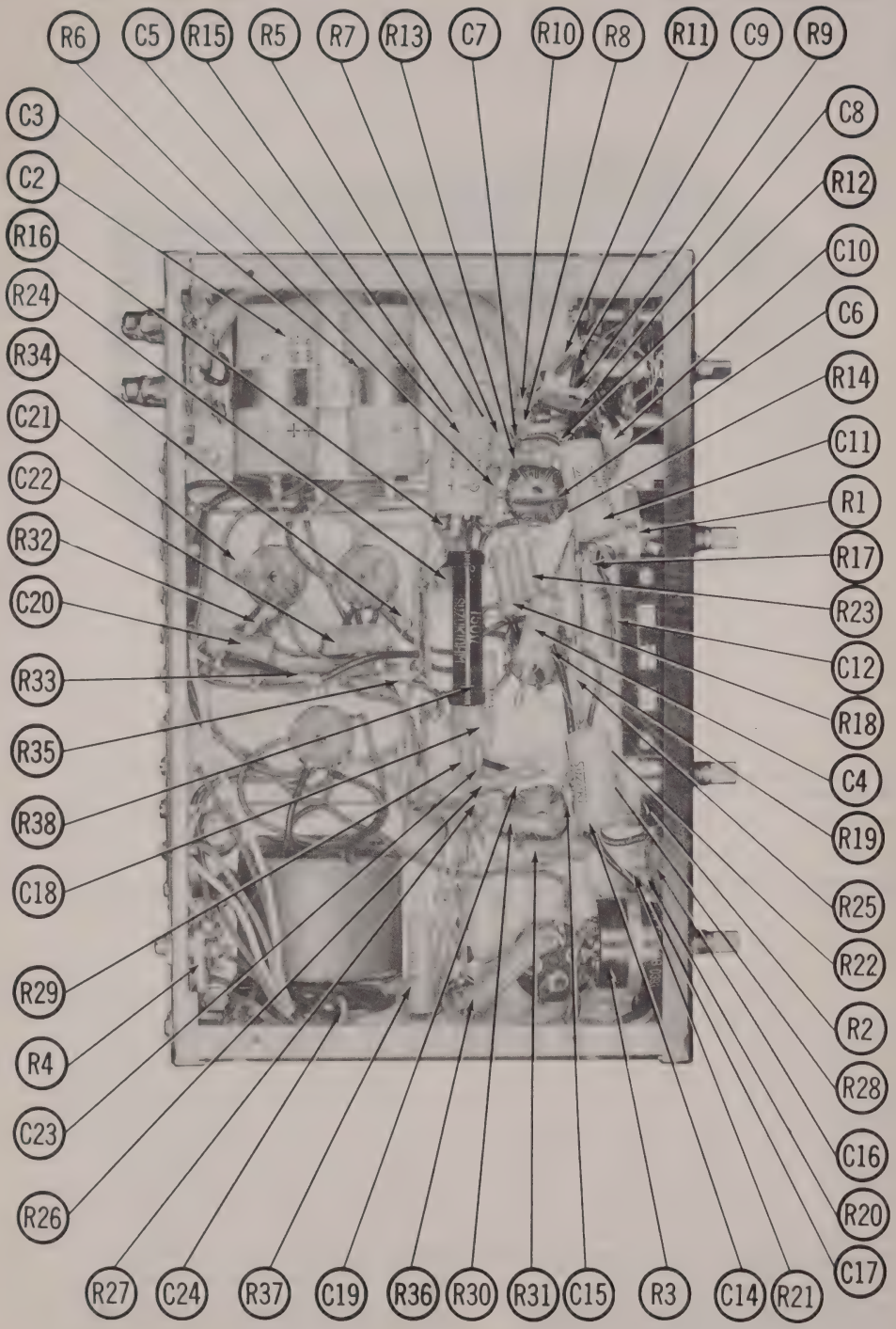
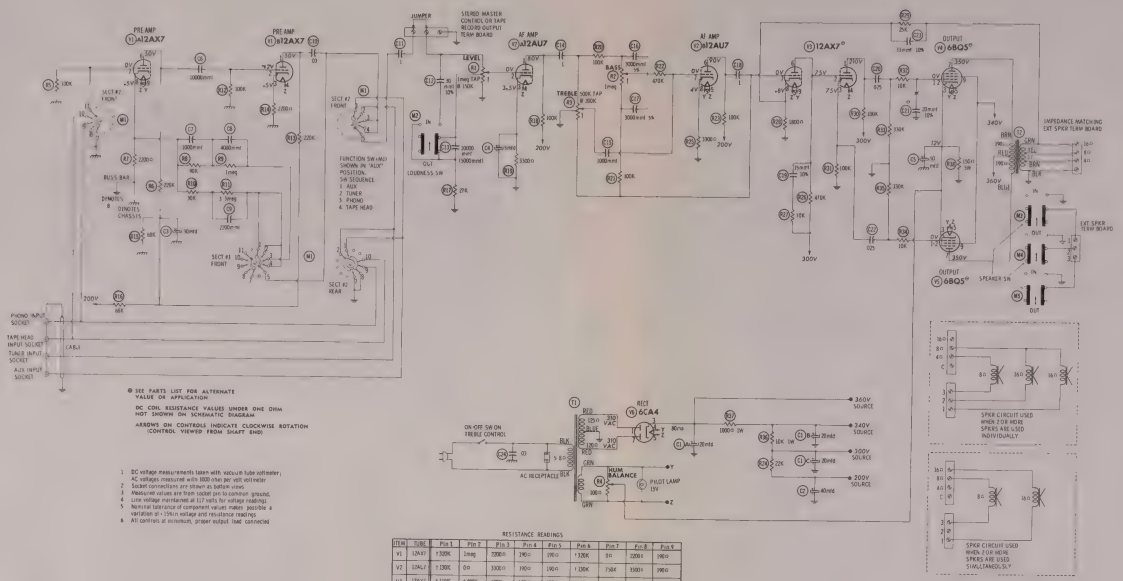


CHASSIS BOTTOM VIEW



@ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter.
2. AC voltages measured with 1000 ohm per volt ac meter.
3. Socket connections are shown as bottom views.
4. Measured values are from socket pin to common ground.
5. Line voltage maintained at 117 volts for voltage readings.
6. Normal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
7. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	1.52K	1meg	2200Ω	190Ω	190Ω	1.12K	0Ω	220KΩ	190Ω
V2	12AU7	1.12K	0Ω	330Ω	190Ω	190Ω	1.12K	75K	330Ω	190Ω
V3	12AX7	1.12K	1.48K	100K	190Ω	190Ω	1.48K	100K	680Ω	190Ω
V4	6BQ5	340K	340K	150Ω	190Ω	190Ω	TP	1.19KΩ	NC	1.00KΩ
V5	6BQ5	340K	340K	150Ω	190Ω	190Ω	TP	1.19KΩ	NC	1.00KΩ
V6	6CA4	125Ω	NC	Y	190Ω	190Ω	NC	125Ω	NC	NC

* THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
NC NO CONNECTION

TP TIE POINT

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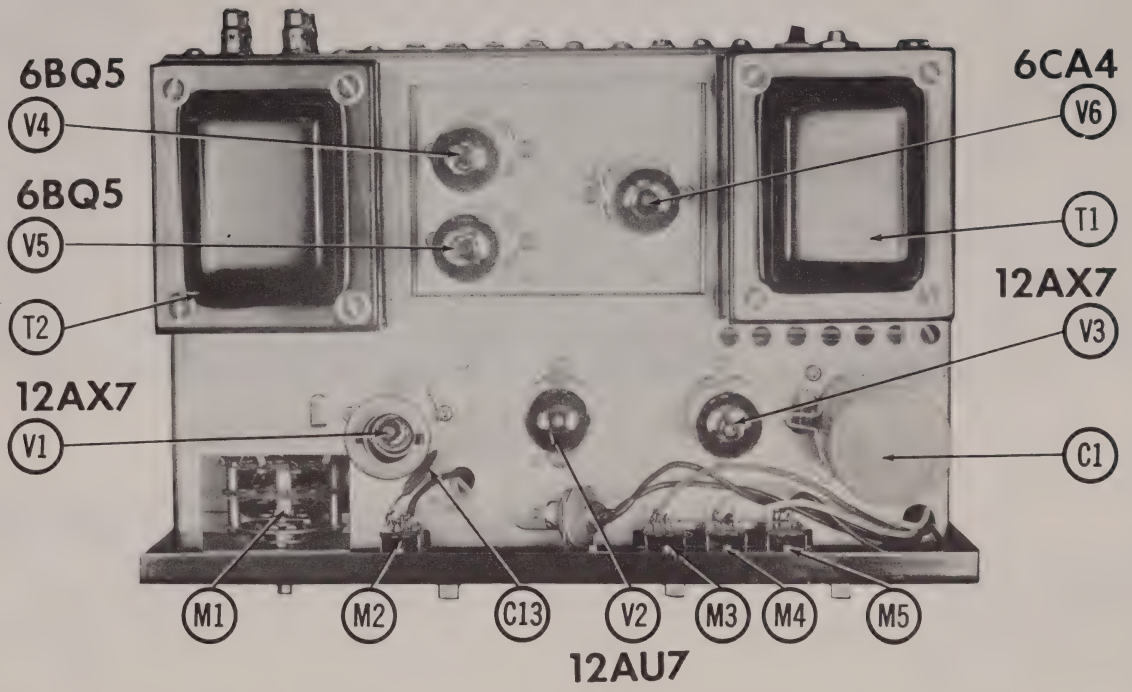

CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	Preamplifier	12AX7
V2	AF Amplifier	12AU7
V3	AF Amp. -Phase Inv.	12AX7
V4	Output	6BQ5 (EL84) *
V5	Output	6BQ5 (EL 84) *
V6	Rectifier	6CA4 (EZ81) *

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA REALISTIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	20	400		AFH3-36	C0270	FP376.5	TMT-34	TVL-3780	
B	20	400							
C	20	400							
C2	40	350		PRS1670	BR4035	TC78	TD-40-350	TVA-1611	
C3	30	350		PRS1660	BR3035	TC77	TD-30-350	TVA-1610	
C4	5	25		PRS1310	BBR5-50	TC30	TD-5-25	TVA-1203	
C5	50	50		PRS1350	BR505	TC39	TD-50-50	TVA-1308	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C7	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C8	4000		BPD-004	DD-402	BYA10D4	CCD-392	B-240	5HK-D40
C9	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C10	.03 400V			DD-303	CUB6S3	4DP-2-303	GEM-413	4TM-S3
C11	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C12	30 10%			D6-300	L10Q30	CCD-300	GP430	10TS-Q30
C13	10000	(5000) †	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C15	1000		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C16	3000 5%		1464-003		1R5D3	CM-19B-302J	MCE461	MS-23
C17	3000 5%		1464-003		1R5D3	CM-19B-302J	MCE461	MS-23
C18	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C19	15 10%			D6-150	L10Q15	CCD-150	GP415	10TS-Q15
C20	.025 400V		P488N-025		DPMS-S25	4DP-2-253	GEM-4125	4TM-S25
C21	20 10%	Note 1		D6-200	L10Q20	CCD-200	GP420	10TS-Q20
C22	.025 400V		P488N-025		DPMS-S25	4DP-2-253	GEM-4125	4TM-S25
C23	33 10%			D6-330	L10Q33	CCD-330	GP433	10TS-Q33
C24	.03 400V		P488N-03	DD-303	CUB6S3	4DP-2-303	GEM-413	4TM-S3

† Alternate Value.
Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA REALISTIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1meg 150K Tap	½						Level
R2	1meg	½						Bass
R3A	500K	½						Treble
B	200K Tap Switch							Power Off-On
R4A	100Ω	2(WW)		WN-101	A43-100	W11-084	R100L	Hum Balance
B	Shaft			Not Req.	FKS-1/4	SK5	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	100K	
R6	220K	
R7	2200Ω	
R8	90K	
R9	1meg	
R10	30K	
R11	3.3meg	
R12	100K	
R13	220K	
R14	2200Ω	
R15	68K	
R16	68K	

ITEM No.	RATING	REMARKS
R17	27K	
R18	100K	
R19	3300Ω	
R20	100K	
R21	100K	
R22	470K	
R23	100K	
R24	22K	
R25	3300Ω	
R26	470K	
R27	10K	
R28	1800Ω	

ITEM No.	RATING	REMARKS
R29	25K	
R30	100K	
R31	100K	
R32	10K	
R33	330K	
R34	10K	
R35	330K	
R36	10K 1W	
R37	1000Ω 1W	
R38	150Ω 5W	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA REALISTIC PART No.	Merit PART No.	Ram PART No	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V@ .66A	620 VCT @.080A	6.3V@ 3.4A							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA REALISTIC PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	7100Ω CT	16Ω Tap @8Ω, 4Ω							

MISCELLANEOUS

ITEM No.	PART NAME	REALISTIC PART No.	NOTES
M1	Switch		Function (Rotary Wafer Type)
M2	Switch		Loudness (DPDT, Slide Type)
M3	Switch		Speaker #1 (DPDT, Slide Type)
M4	Switch		Speaker #2 (DPDT, Slide Type)
M5	Switch		Speaker #3 (DPDT, Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE®

ROLAND
MODELS 4C4, 4T5

ROLAND
MODELS 4C4, 4T5

MODEL 4C4

ROLAND
MODELS 4C4, 4T5

TRADE NAME	Roland Models 4C4, 4T5
MANUFACTURER	Roland Radio Corp., A Div. Of Herold Radio & Electronics, 716 S. Columbus Ave., Mount Vernon, N. Y.
TYPE SET	AC Operated 4 Tube AM Receiver With Electric Clock (Model 4T5 is not a Clock Version)
POWER SUPPLY	110-120 Volts AC, 60 Cycles
TUNING RANGE—BROADCAST	540 – 1620KC RATING 24 Watts, .22 Amp. @117 Volts AC (Less Clock)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A3, A4.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to RF stator lug (rear section) of tuning gang. Low side to chassis.	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2	Adjust for maximum deflection.
2.	"	1620KC	"	"	A3	"
3.	Loop	1400KC	Tune to 1400KC	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output while rocking tuning gang.

SET 500 FOLDER 15

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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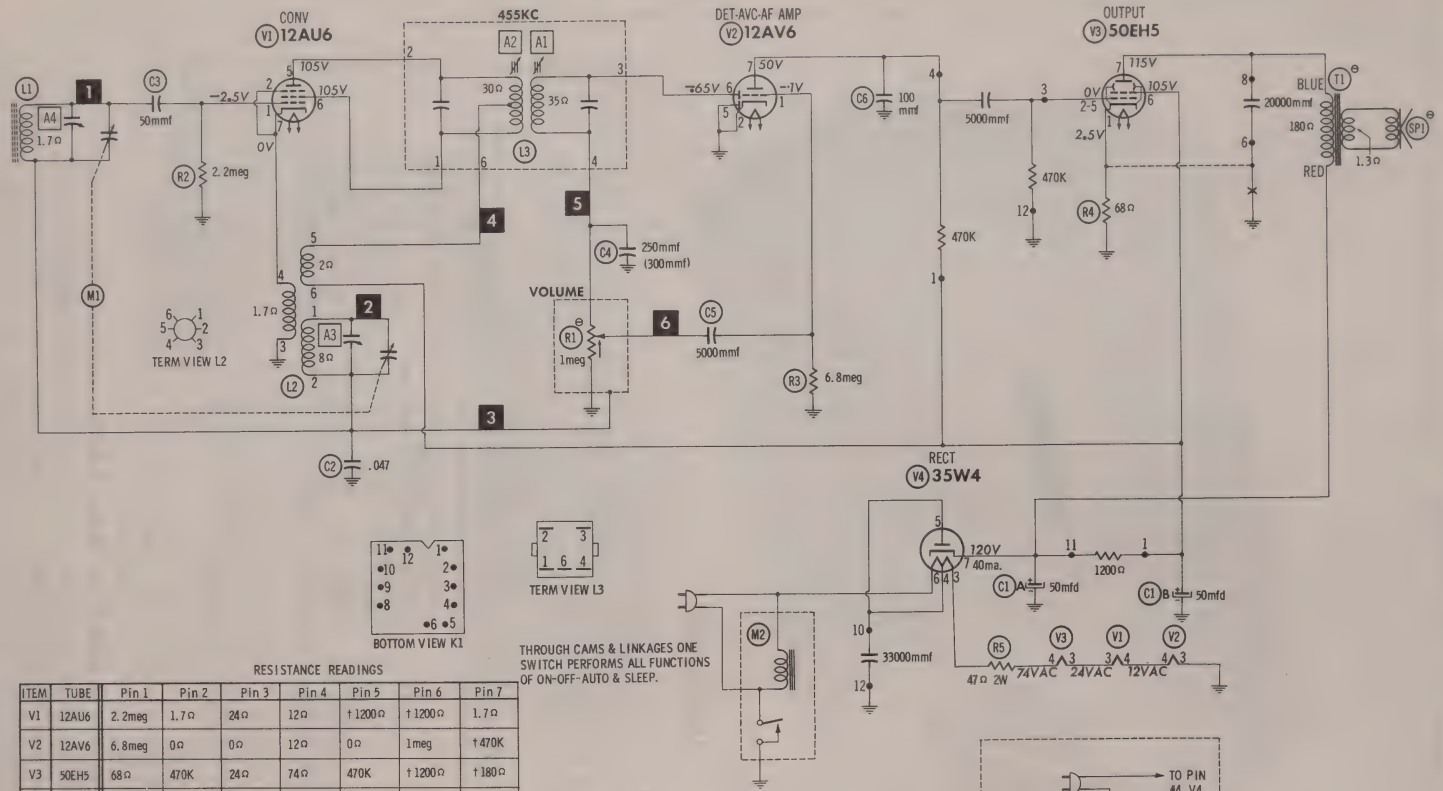

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12AU6	2.2meg	1.7Ω	24Ω	12Ω	†1200Ω	†1200Ω	1.7Ω
V2	12AV6	6.8meg	0Ω	0Ω	12Ω	0Ω	1meg	†470K
V3	50EH5	68Ω	470K	24Ω	74Ω	470K	†1200Ω	†180Ω
V4	35W4	NC	NC	121Ω	145Ω	156Ω	156Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V4. NC NO CONNECTION

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE

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ROLAND
MODELS 4C4, 4T5

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	• GENERAL ELECTRIC •		RAYTHEON •	SYLVANIA •	
V1 V2	Converter Det.-AVC-AF Amp.	12AU6 12AV6	V3 V4	Output Rectifier	50EH5 35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ROLAND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A B	50 50	150 150	582012	PRS2210	ESS-7515	PWD211	TDLD-9	TVA-2453	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C3	50		SI 50	DD-500	L10Q5	CCD-500	GP450	10TS-Q50
C4	250	(300) †	SI 250	DD-251	L10T25	CCD-251	GP325	10TS-T25
C5	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C6	100		1468-0001	DD-101	5W5T1	CM-19B-101M	MC235	1FM-31

† Alternate Value

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ROLAND PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	1meg	½	368059				P2-16A	Volume Note 1

Note 1. Part #368061 (With Switch) used in Model 4T5.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	2.2meg	
R3	6.8meg	

ITEM No.	RATING	REMARKS
R4	68Ω	

ITEM No.	RATING	REMARKS
R5	47Ω 2W	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ROLAND PART No.	REPLACEMENT DATA
K1	Audio-Power Module	5000mmf, 20000mmf, 33000mmf, 1200Ω, 470K, 470K	426002	

PRINTED BOARD

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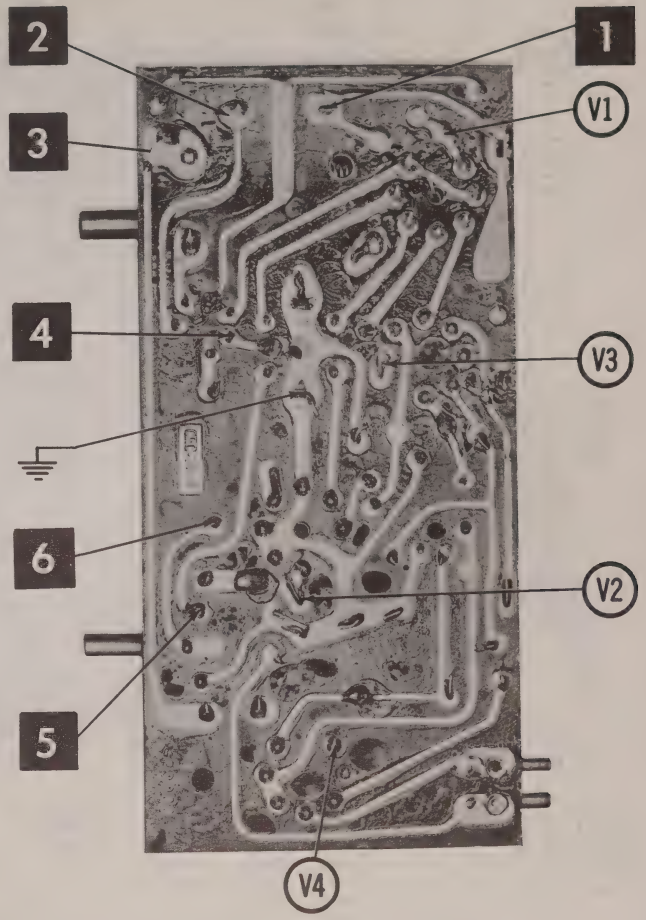
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		ROLAND PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	460036		2002		
L2	Osc. Coil	455086				
L3	IF Trans.	450031				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ROLAND PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2800Ω	3-4Ω	(Part of SP1)	A-3025	AU-605	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ROLAND PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	404020 *	4A07RZ4.2	* Includes T1

MISCELLANEOUS

ITEM No.	PART NAME	ROLAND PART No.	NOTES
M1	Tuning Cap.	590056	2 Gang
M2	Clock	384023	
	Printed Board	420022	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

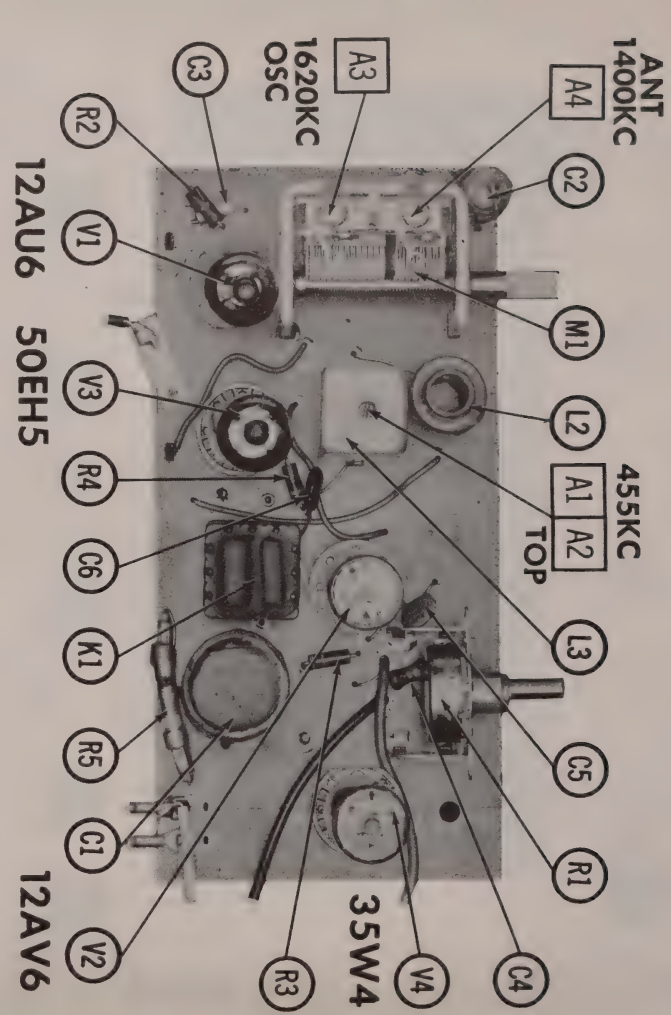
NAME	PART NO.	DESCRIPTION
Knob	272336	Tuning, Calibrated, Pink, Model 4C4
Knob	272337	Tuning, Calibrated, White, Model 4C4, 4T5
Knob	272338	Volume, Pink, Model 4C4
Knob	272339	Volume, White, Model 4C4, 4T5
Knob	272343	Volume, Red, Model 4T5
Knob	272342	Tuning, Calibrated, Red, Model 4T5
Knob	272271	Clock, Model 4C4
Crystal	260015	Clock, Model 4C4
Cabinet	250500	Pink, Model 4C4
Cabinet	250501	White, Model 4C4
Cabinet	250510	Red, Model 4T5
Cabinet	250511	White, Model 4T5

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

CHASSIS—TOP VIEW



PHOTOFACT® Folder

**STEELMAN MODELS
405, 602**

STEELMAN MODELS
405, 602

MODEL 602

STEELMAN MODELS
405, 602

TRADE NAME	Steelman Models 405, 602
MANUFACTURER	Steelman Phono & Radio Co., 2-30 Anderson Ave., Mount Vernon, N. Y.
TYPE SET	AC Operated 3 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 32 Watts, .34 Amp. @ 117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER PART #300069 — SEE V-M 1201 — PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12

FOR SERVICE INFORMATION ON RECORD CHANGER PART #300413 — SEE MONARCH UA8 — PHOTOFACT SET 381 FOLDER 11 OR RECORD CHANGER MANUAL RC-11

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JT947

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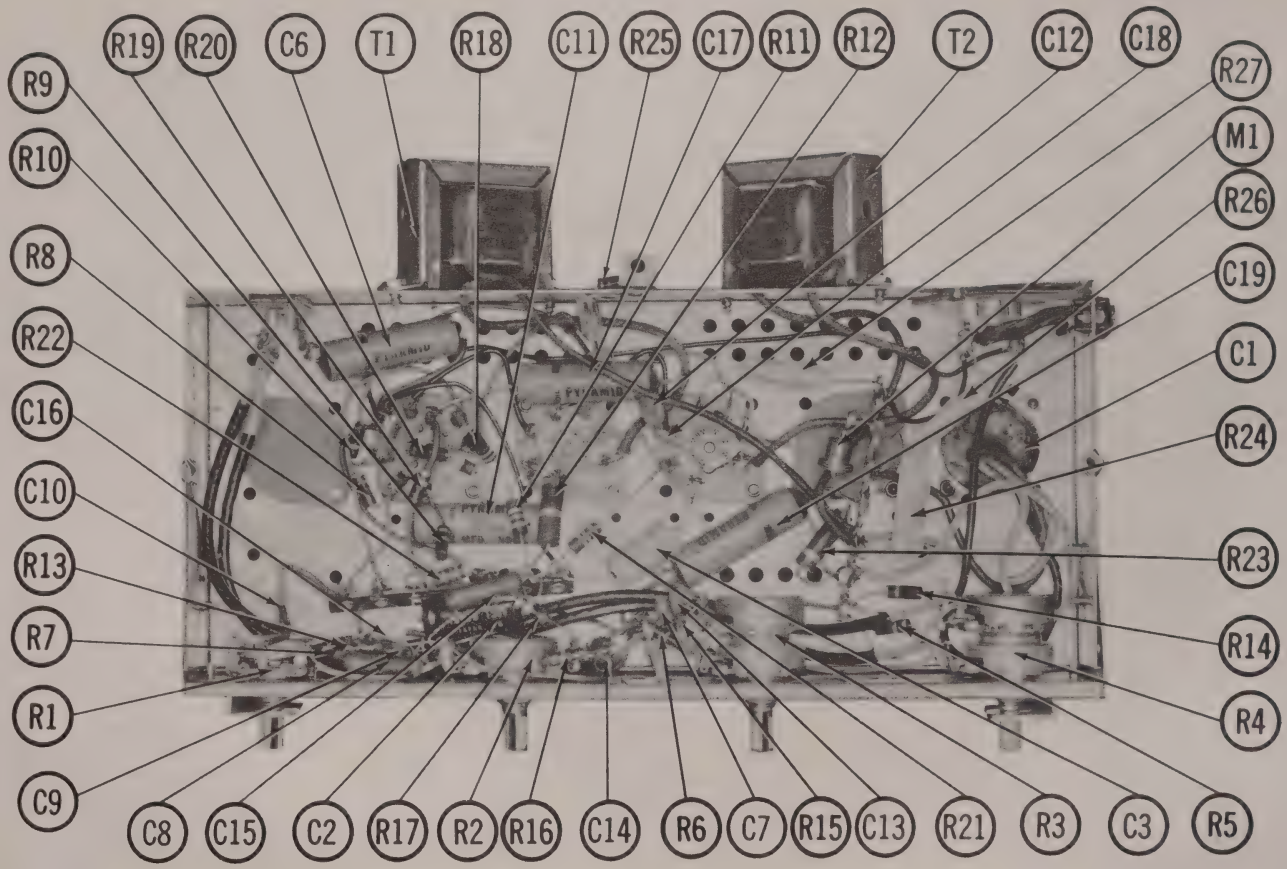


CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7	V2 V3	Channel 1 Output Channel 2 Output	50C5 50C5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA STEELMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	80	150	583021	PR4-250	BBRQ0926.5	WQ410	TDLD-13	TVA-2460	
B	80	150					TD-20-150	TVA-1418	
C	20	150							
C2	100	150		PRS1510	BRI0015	TC493	TD-100-150	TVA-1420	
C3	100	10		PRS1150	BBR100-15	TC2501	TD-100-15	TVA-1130	
C4	2	50NP	581018	NP-PRS7400	BBR4-150	TCN502		TVANS-1301. *	
C5	2	50NP	581018	NP-PRS7400	BBR4-150	TCN502		TVANS-1301. *	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C7	1000	(470) †	BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C8	3000	Note 1	SI 3000	D6-302	BYA10D3	CCD-302	GP230	10TS-D30
C9	3000		SI 3000	D6-302	BYA10D3	CCD-302	GP230	10TS-D30
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	.047 400V	Note 2	P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C12	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C13	1000	(470) †	BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C14	3000	Note 1	SI 3000	D6-302	BYA10D3	CCD-302	GP230	10TS-D30
C15	3000		SI 3000	D6-302	BYA10D3	CCD-302	GP230	10TS-D30
C16	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C17	.047 400V	Note 2	P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C18	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C19	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

Note 1. Not used in some versions. Note 2. Model 405 uses .01mfd in this application. † Alternate Value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA STEELMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	3.25meg*		368009					Volume 1
R2	3.25meg*		368009					Volume 2
R3A	250K		368035	B-50	AD47-250K-S		FA254L	Treble, Channel 1
B	250K			SR-50	Not Req.		RU254L	Treble, Channel 2
C	Shaft			Not Req.	KSS-3		CS3500	
R4A	5meg		368036	B-88	AD47-5meg-S		FA56A	Bass, Channel 1
B	5meg			SR-88	Not Req.		RU56A	Bass, Channel 2
C	Shaft			Not Req.	KSS-3		CS3500	

* Taps @ 1meg & 2meg.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	100K	
R6	220K	
R7	100K	
R8	6.8meg	
R9	100K	
R10	10Ω	
R11	470K	
R12	82Ω 1W	(33Ω) *

Note 1. Not used in some versions.

ITEM No.	RATING	REMARKS
R13	100K	Note 1
R14	100K	
R15	220K	
R16	100K	
R17	100K	Note 1
R18	6.8meg	
R19	100K	
R20	10Ω	

* Alternate Value.

ITEM No.	RATING	REMARKS
R21	470K	
R22	47K	
R23	1000Ω 1W	
R24	125Ω 5W	
R25	47Ω	
R26	47Ω	
R27	47Ω	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA STEELMAN PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2800Ω	3-4Ω	430250	A-2901	AU-608	A-3850	24S04	S-51X	
T2	2800Ω	3-4Ω	430250	A-2901	AU-608	A-3850	24S04	S-51X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA STEELMAN PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	406003 *	6A21	* Model 602
SP2	4"	PM	3-4Ω	404003 *	4A07	◆ Model 405 (2 Used)
SP3	6"	PM	3-4Ω	406003 *	6A21	
SP4	4"	PM	3-4Ω	404003 *	4A07	
	6"	PM	3-4Ω	406002 ◆	6A31	
	4"	PM	3-4Ω	404003 ◆	4A07	

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA STEELMAN PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.090A		RE504 *	1N1764 *	2F4 *	SR200 *	* Silicon

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA STEELMAN PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M2		13TB		26S	Si-1 & S3-3	53	J-43, J-47X	8TA4-S	N-8TA-S

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA STEELMAN PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	REMARKS
M3		W-107STSS † or W-107STDS †◆	S-69X † or S-69SD †◆ or S-69XDD ◆	† Jewel ◆ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	STEELMAN PART No.	NOTES
M4	Switch	370058	Int. Stereo-Ext. Stereo (DPDT Slide Type)

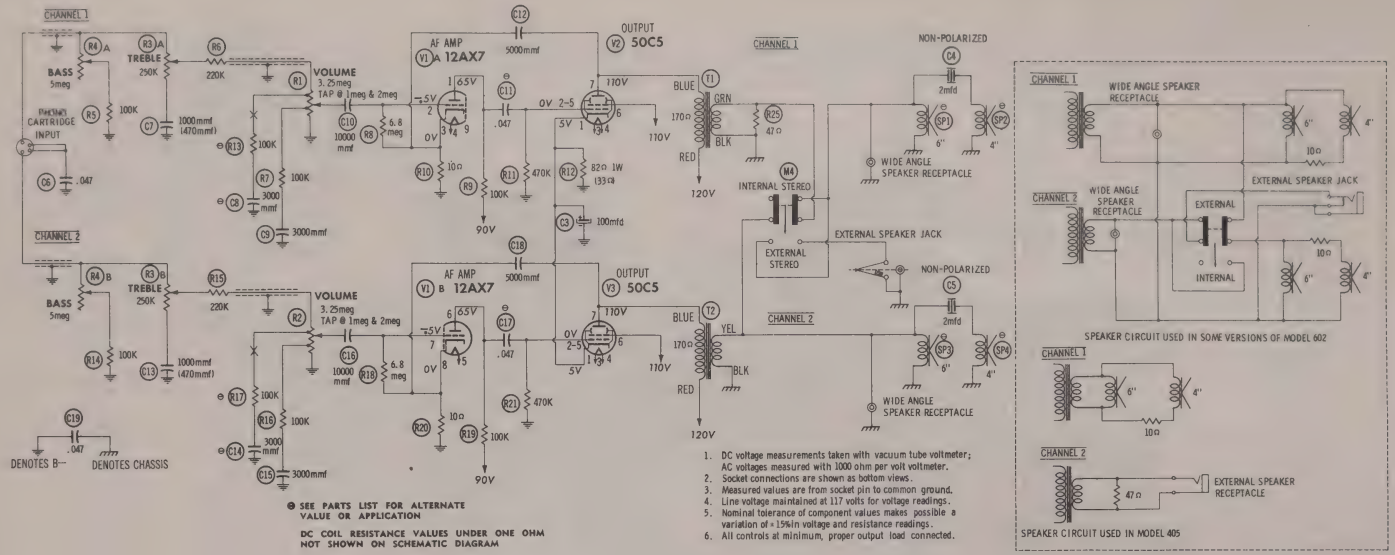
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knobs	272326	
Cabinet	211250	Mahogany, Model 602
Cabinet	211251	Limed Oak, Model 602
Cabinet	211252	Walnut, Model 602
Cabinet	241590	Brown & White, Model 405
Cabinet	241600	Black & White, Model 405

WIRING DATA

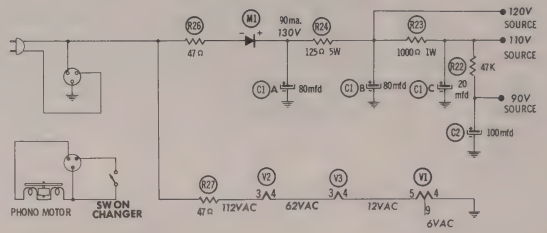
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)


CHANNEL 1
BASS 5meg
TREBLE 250K
VOLUME 3.25meg TAP @ 1meg & 2meg
PHONO CARTRIDGE INPUT
CHANNEL 2
DENOTES B—
DENOTES CHASSIS
AF AMP V1A 12AX7
AF AMP V1B 12AX7
OUTPUT V2 50C5
OUTPUT V3 50C5
INTERNAL STEREO
EXTERNAL STEREO
EXTERNAL SPEAKER JACK
NON-POLARIZED
WIDE ANGLE SPEAKER RECEPTACLE
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.
SPEAKER CIRCUIT USED IN SOME VERSIONS OF MODEL 602
SPEAKER CIRCUIT USED IN MODEL 405

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†150K	6.8meg	10Ω	0Ω	12Ω	†150K	6.8meg	10Ω	6Ω
V2	50C5	82Ω	470K	112Ω	62Ω	470K	†1100Ω	†295Ω		
V3	50C5	82Ω	470K	62Ω	12Ω	470K	†1100Ω	†295Ω		

† MEASUREDFROM OUTPUT OF M1.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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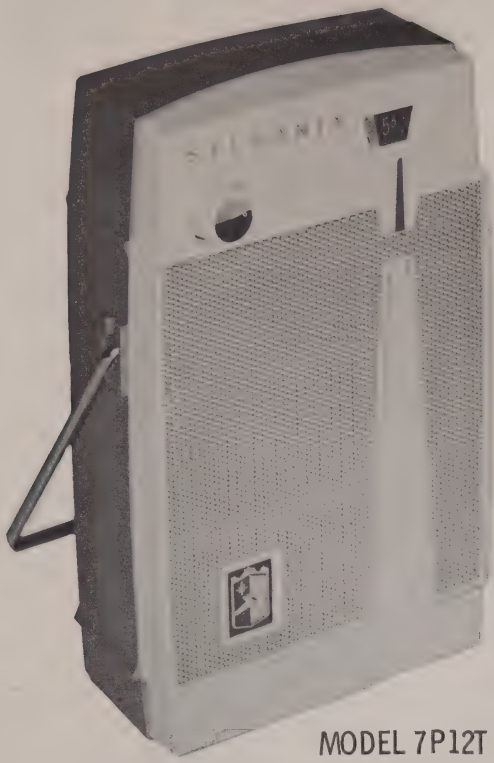
STEELMAN MODELS 405, 602

PHOTOFACT® Folder with CIRCUITRACE®

SYLVANIA MODELS 7P12E, T, 2800, 2808, 2809, 2901 (Ch. 1-638-1, 1-638-2, 1-638-3)

SYLVANIA MODELS 7P12E, T, 2800, 2808, 2809, 2901 (Ch. 1-638-1, 1-638-2, 1-638-3)



MODEL 7P12T

SYLVANIA MODELS 7P12E, T, 2800, 2808, 2809, 2901 (Ch. 1-638-1, 1-638-2, 1-638-3)

TRADE NAME	Sylvania Models 7P12E, 7P12T (Ch. 1-638-1); 2800, 2808, 2809 (Ch. 1-638-2); 2901 (Ch. 1-638-3)
MANUFACTURER	Sylvania Home Electronics, Div. of Sylvania Electric Products, Inc., 700 Ellicott Street, Batavia, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	6 Volts DC RATING 6 MA@6 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	540 – 1650KC 15 MA@6 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A5, A6..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	600KC	Tune to 600KC Signal.	"	A4	Adjust for maximum output while rocking tuning gang.
3.	"	1650KC	Tuning gang fully open.	"	A5	Adjust for maximum output.
4.	"	1450KC	Tune to 1450KC Signal	"	A6	"

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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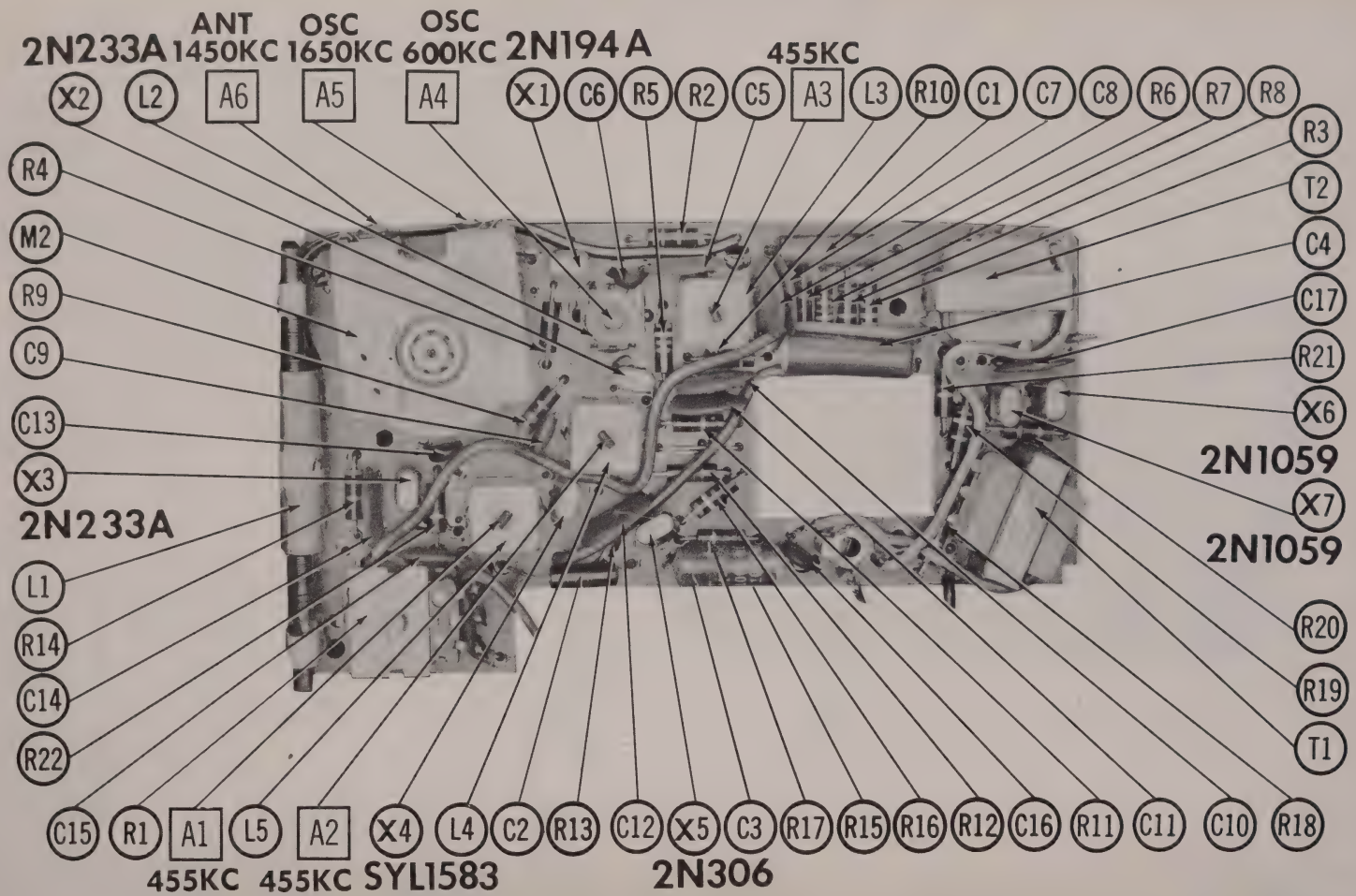
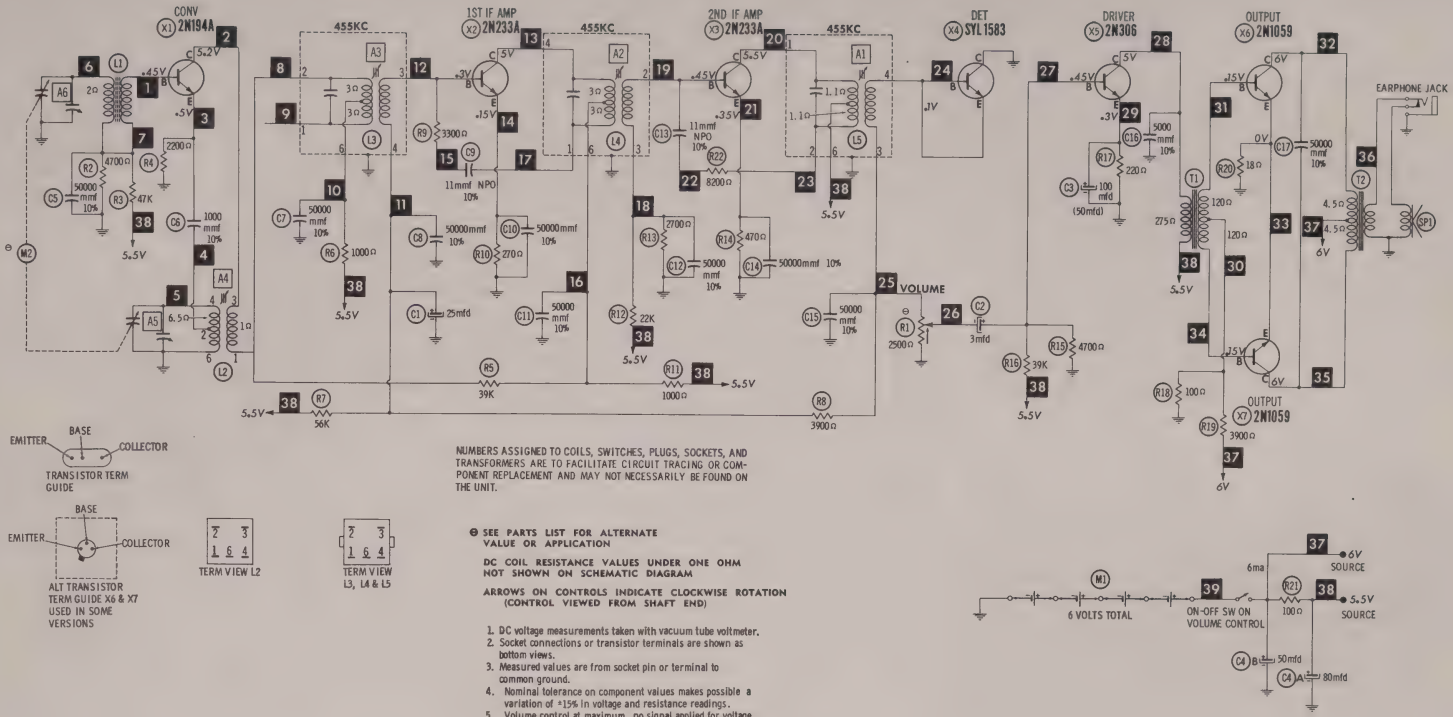
JF978

SET 500 FOLDER 17



CHASSIS TOP VIEW



TRANSISTOR TERM GUIDE

EMITTER BASE COLLECTOR

ALT TRANSISTOR TERM GUIDE X6 & X7 USED IN SOME VERSIONS

TERM VIEW L2

TERM VIEW L3, L4 & L5

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

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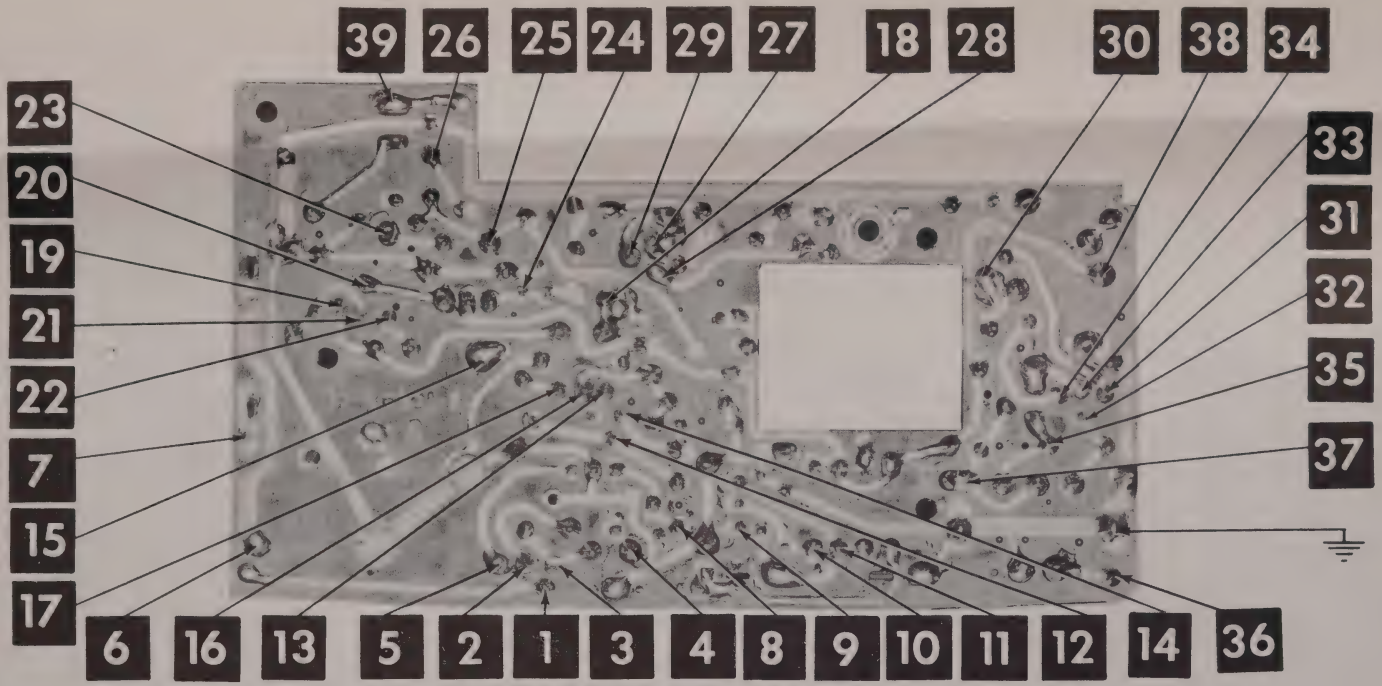
SYLVANIA MODELS 17B110, 17M101, 17P11 Series (Ch. 547-1, 547-2)



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PRINTED BOARD

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N194A	Converter	2N444		2N1366	2N194A	NPN
X2	2N233A	1st IF Amplifier	2N444		2N1367	2N233A	NPN
X3	2N233A	2nd IF Amplifier	2N444		2N1367	2N233A	NPN
X4	SYL1583	Detector		2N410	CK879	SYL1583	PNP
X5	2N306	Driver	2N306	2N649		2N306	NPN
X6	2N1059	Output	2N444	2N649		2N306	NPN } Matched
X7	2N1059	Output	2N444	2N649		2N306	NPN } Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	25	3	161-1049	PWE3025	NLW25-10	TT3X25	ML25-3	TE1055	
C2	3	6	161-1037	PWE6003	NLW3-25	TT6X3	ML4-6	TE1082	
C3	100	3		PWE3100	NLW100-12	TT6X100	ML100-3	TE1059, 5	①
C4A	80	6	161-2023	BCD10X8050		PETA2385		TE1101, 5	
B	50	6						TE1100	

① Some versions may use 50mfd in this application. (Part #161-1050).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	50000 10%	#169-0054						
C6	1000 10%		DI-1000	DD-102		CCD-102	GP210	10TS-D10
C7	50000 10%	#169-0054						
C8	50000 10%	#169-0054						
C9	11 NPO 10%		NPO-DI 10	DTZ-10	C10Q10C	CCTO-100	CNO-410	10TCC-Q10
C10	50000 10%	#169-0054						
C11	50000 10%	#169-0054						
C12	50000 10%	#169-0054						
C13	11 NPO 10%		NPO-DI 10	DTZ-10	C10Q10C	CCTO-100	CNO-410	10TCC-Q10
C14	50000 10%	#169-0054						
C15	50000 10%	#169-0054						
C16	5000 10%		DI-5000			CCD-502		10TS-D5
C17	50000 10%	#169-0054						

Sylvania Part Number.

DISASSEMBLY INSTRUCTIONS

MODEL 7P12 SERIES

1. Remove screw holding back cover to case front.
2. Remove tuning knob screw. Remove knob.
3. Remove 3 chassis mounting screws, 2 at bottom of chassis and one near tuning gang.
4. Remove chassis.

MODEL 2800 SERIES

1. Remove screw holding back cover to case front.
2. Remove dial plate from tuning knob. (Pry up.)
3. Remove tuning knob screw. Remove knob.
4. Remove 3 chassis mounting screws, 2 at bottom of chassis and one near tuning gang.
5. Remove chassis.

MODEL 2901

1. Remove volume and tuning knobs. (Pull Off).
2. Remove screw located under tuning knob.
3. Open rear cover. Remove screw holding chassis to speaker.
4. Remove chassis.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A B	2500Ω Switch	1/4	152-0062 ①					Volume Power Off-On

① Chassis 1-638-3 uses Part #152-0065.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	4700Ω	
R3	47K	
R4	2200Ω	
R5	39K	
R6	1000Ω	
R7	56K	
R8	3900Ω	

ITEM No.	RATING	REMARKS
R9	3300Ω	
R10	270Ω	
R11	1000Ω	
R12	22K	
R13	2700Ω	
R14	470Ω	
R15	4700Ω	

ITEM No.	RATING	REMARKS
R16	39K	
R17	220Ω	
R18	100Ω	
R19	3900Ω	
R20	18Ω	
R21	100Ω	
R22	8200Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		SYLVANIA PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	581-0017				
L2	Osc. Coil	113-0047				
L3	1st IF Trans.	121-0031				
L4	2nd IF Trans.	122-0034				
L5	3rd IF Trans.	122-0035				

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SYLVANIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	.8	1	143-0078					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SYLVANIA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	30Ω CT	3-4Ω	143-0079			TA-39 ①			

① Bend tabs down. Use 16Ω secondary tap.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	QUAM PART No.	
SP1	3½"	PM	3-4Ω	539-0353		

BATTERIES

ITEM No.	VOLTAGE	SYLVANIA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	*		930 *		1015 *		M-15R*	* 4 Required

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M2	Tuning Cap.	170-0025	Chassis 1-639-1, & 1-638-2
	Tuning Cap.	170-0040	Chassis 1-638-3
	Printed Board	32-96305-2	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	741-0050	Tuning, Models 7P12E, T
Knob	741-0076	Tuning, Model 2800
Knob	741-0086	Tuning, Model 2808
Knob	741-0085	Tuning, Model 2809
Knob	741-0084	Tuning, Model 2901
Knob	742-0032	Off-On, Volume, Model 7P12E
Knob	742-0037	Off-On, Volume, Model 7P12T
Knob	740-0319	Off-On, Volume, Model 2800
Knob	740-0321	Off-On, Volume, Model 2808
Knob	740-0320	Off-On, Volume, Model 2809
Knob	740-0322	Off-On, Volume, Model 2901
Dial Window	489-0035	Model 7P12E, T
Cabinet Back	822-0043	Model 7P12E
Cabinet Back	822-0044	Model 7P12T
Cabinet Back	822-0062	Model 2800
Cabinet Back	822-0066	Model 2803
Cabinet Back	822-0064	Model 2809
Cabinet Front	822-0048	Model 7P12E
Cabinet Front	822-0049	Model 7P12T
Cabinet Front	822-0063	Model 2800
Cabinet Front	822-0067	Model 2805
Cabinet Front	822-0065	Model 2809
Case	814-0018	Leather, Model 2901

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

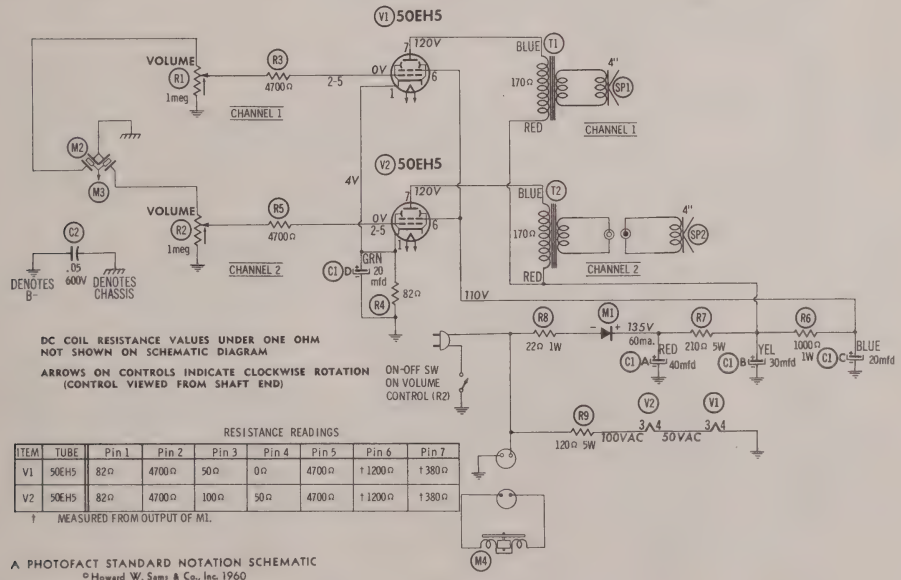
PHOTOFACT® Folder

TRAV-LER MODEL 1008

TRAV-LER MODEL 1008

TRAV-LER MODEL 1008

TRADE NAME	Trav-Ler Model 1008
MANUFACTURER	Trav-Ler Radio Corp., 571 W. Jackson Blvd., Chicago 6, Illinois
TYPE SET	AC Operated 2 Tube Stereo Phono Amplifier With 4 Speed Manual Record Player
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 26 Watts, .26 Amp. @ 117 Volts AC (Less Motor)



DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

ON-OFF SW ON VOLUME CONTROL (R2)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	50EH5	82Ω	4700Ω	50Ω	0Ω	4700Ω	†1200Ω	†380Ω
V2	50EH5	82Ω	4700Ω	100Ω	50Ω	4700Ω	†1200Ω	†380Ω

† MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JR905

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SET 500 FOLDER 18

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel 1 Output	50EH5	V2	Channel 2 Output	50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA TRAV-LER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	150	EC-121	PR4-200	BBRQ44315C	WQ230	CDB-Q-1001	TVAS-4519 *	
B	30	150							
C	20	150							
D	20	25							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S5

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA TRAV-LER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	VC-118	B-70	A47-1meg-Z	Q13-137	U53	Channel 1 Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	1meg	½	VC-70	B-70	A47-1meg-Z	Q13-137	U53	Channel 2 Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	4700Ω	
R4	82Ω	
R5	4700Ω	

ITEM No.	RATING	REMARKS
R6	1000Ω 1W	
R7	210Ω 5W	
R8	22Ω 1W	

ITEM No.	RATING	REMARKS
R9	120Ω 5W	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA TRAV-LER PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2400Ω	3-4Ω	AT-51	A-3025	AU-605	A-3332	24S53	S-12X	
T2	2400Ω	3-4Ω	AT-51	A-3025	AU-605	A-3332	24S53	S-12X	

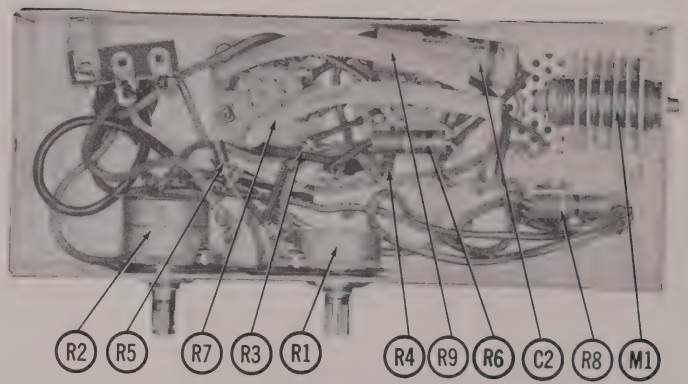
SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA TRAV-LER PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	SPK-38	4A1	
SP2	4"	PM	3-4Ω	SPK-38	4A1	

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA TRAV-LER PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.060A	SR-4 *	1235AH *	1N1764 ♦	100A *	SR200 ♦	* Selenium ♦ Silicon

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA TRAV-LER PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M2	PU-46	KR-74TS*		96				12TH-S	

* Includes Arm.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA TRAV-LER PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	REMARKS
M3	(78 RPM)	W-104STS † or W-104STD ♦	CRA-57 † or CRA-57D ♦	† Jewel ♦ Diamond
	(LP)	W-104MGS † or W-104MGD ♦	CRA-57X † or CRA-57XD ♦	

MISCELLANEOUS

ITEM No.	PART NAME	TRAV-LER PART No.	NOTES
M4	Motor	4-M-18	Phono Drive

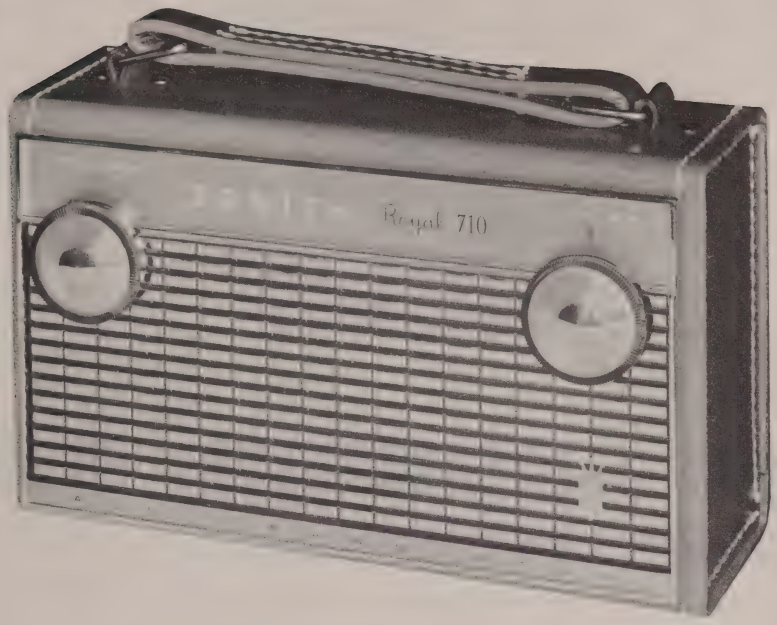
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE®

ZENITH MODEL
Royal 710L (Ch. 7CT43Z1)

ZENITH MODEL
Royal 710L (Ch. 7CT43Z1)



ZENITH MODEL
Royal 710L (Ch. 7CT43Z1)

TRADE NAME	Zenith Model Royal 710L (Ch. 7CT43Z1)		
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois		
TYPE SET	Battery Operated Transistorized Portable AM Receiver		
POWER SUPPLY	9 Volts DC	RATING	10MA@9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	535 – 1620KC		15MA@9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3, A5....GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537
A4, A6.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1620KC	"	"	A4	"
3.	"	600KC	600KC	"	A5	Adjust for maximum output while rocking tuning gang.
4.	"	1260KC	1260KC	"	A6	Adjust for maximum output.

SET 500 FOLDER 19

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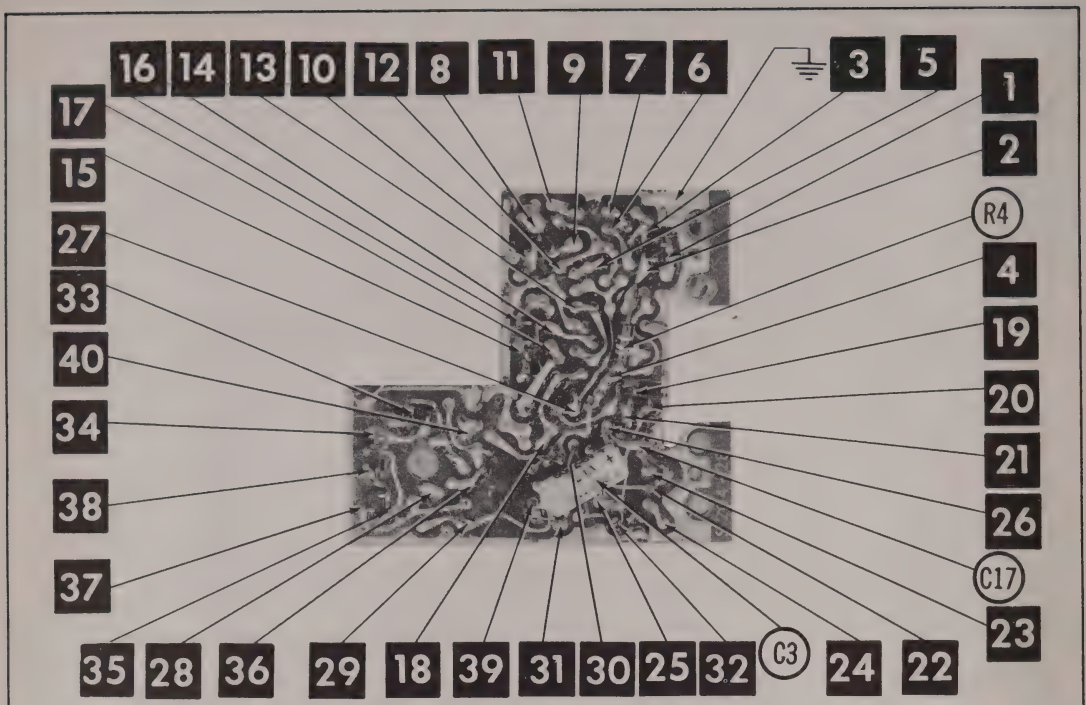
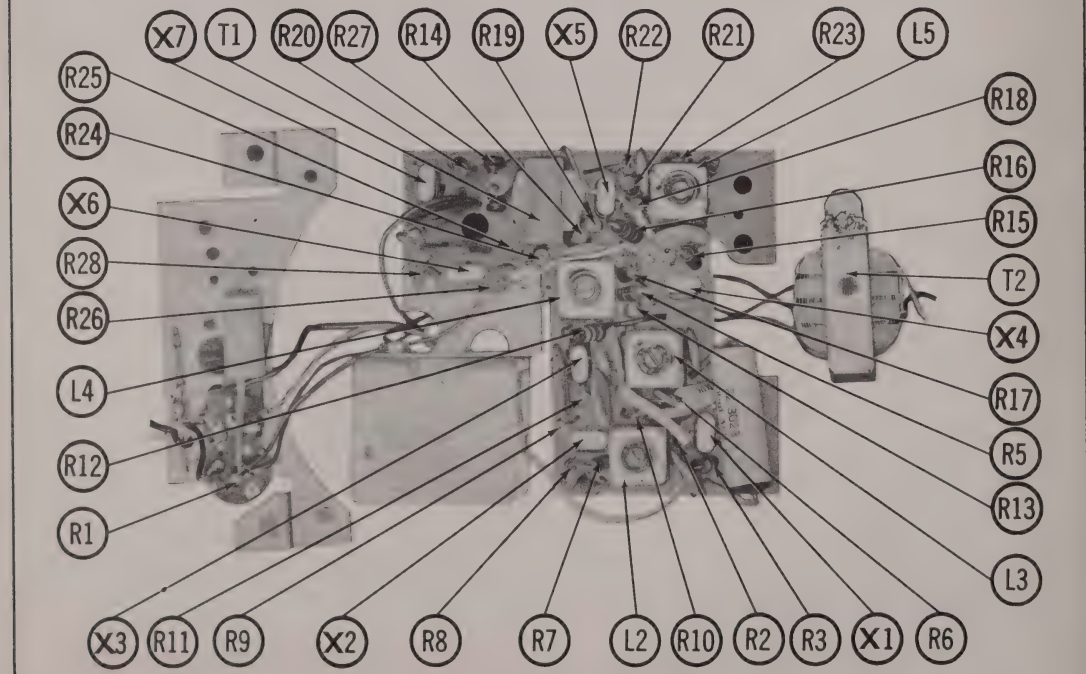
JF942

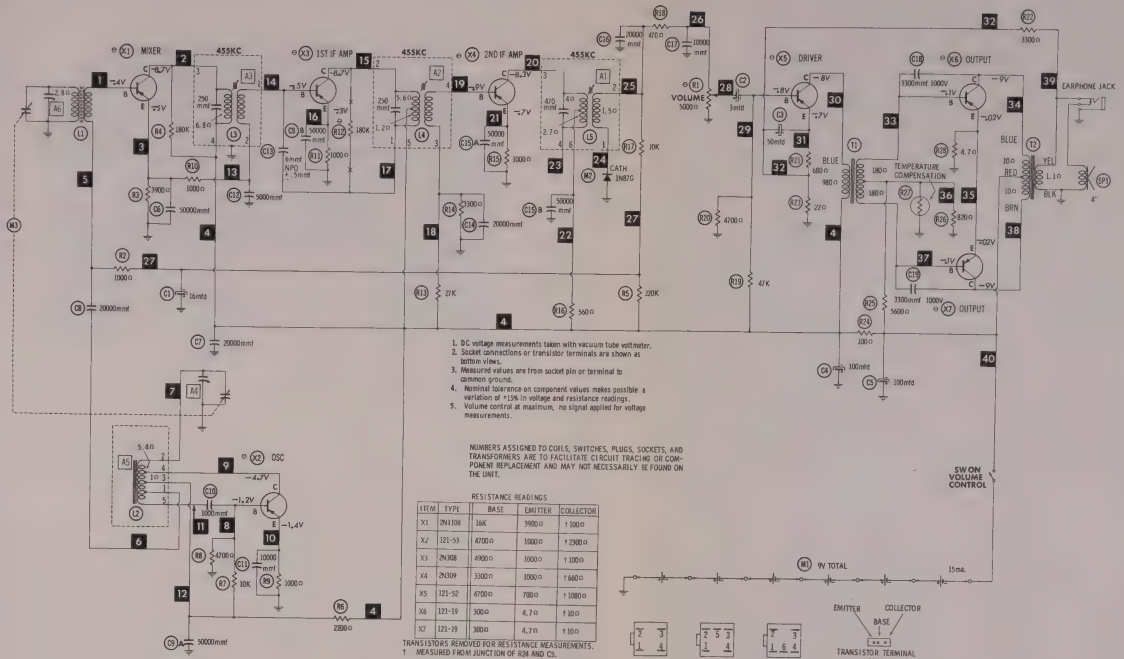


A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD



PRINTED BOARD — RESISTOR, INDUCTOR & TRANSISTOR IDENT.



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N1108	16K	3900Ω	↑100Ω
X2	121-53	4700Ω	1000Ω	↑2300Ω
X3	2N308	4900Ω	1000Ω	↑100Ω
X4	2N309	3300Ω	1000Ω	↑660Ω
X5	121-52	4700Ω	700Ω	↑1080Ω
X6	121-19	300Ω	4.7Ω	↑10Ω
X7	121-19	300Ω	4.7Ω	↑10Ω

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS.
↑ MEASURED FROM JUNCTION OF R24 AND C5.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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ZENITH MODEL
Royal 710L (Ch. 7CT43Z1)

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	MFGR. PART NO.	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	121-128 *	Mixer (2N1108) *			2N486	2N412	PNP
X2	121-53	Oscillator			2N486	2N140	PNP
X3	121-67	1st IF Amp. (2N308)			2N483	2N409	PNP
X4	121-113	2nd IF Amp. (2N309)				2N409	PNP
X5	121-52	Driver (R120)		2N406	2N362	2N406	PNP
X6	121-19	Output (R16)		2N408	2N633	2N408	PNP) Matched
X7	121-19	Output (R16)		2N408	2N633	2N408	PNP) Pair

* Red Chassis Dot. Chassis indicated with Black Dot uses Part #121-54 (2N252) in this application.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	16	3	22-2871	PWE3015	NLW15-12	TT6X15	ML20-6	TE-1053.5	
C2	3	12	22-2884	PWE25003	NLW5-15	TT12X3	ML4-15	TE-1122	
C3	50	6	22-2726	PWE6050	NLW50-6	TT6X50	ML50-6	TE-1100	
C4	100	10	22-3023	PWE10100	NLW100-12	TT15X100	ML100-15	TE-1119.3	
C5	100	10	22-3023	PWE10100	NLW100-12	TT15X100	ML100-15	TE-1119.3	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	EMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C7	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C8	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C9A	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
B	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C10	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	5000		BPD-005	DD-502	BYA10D5 C10V6C	CCD-502	B-250	5HK-D50
C13	6 NPO ± .5mmf	#22-2381						
C14	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C15A	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
B	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C16	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C17	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	3300 1000V	#22-11	BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C19	3300 1000V	#22-11	BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33

\# Zenith Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	5000Ω	1/4	63-4634①					Volume
B	Switch							Power Off-On

① Some versions may use Part #63-4633.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	1000Ω	
R3	3900Ω	
R4	180K	
R5	220K	
R6	2200Ω	
R7	10K	
R8	4700Ω	
R9	1000Ω	
R10	1000Ω	

ITEM No.	RATING	REMARKS
R11	1000Ω	
R12	180K	Note 1
R13	27K	
R14	3300Ω	
R15	1000Ω	
R16	560Ω	
R17	10K	
R18	470Ω	
R19	47K	

ITEM No.	RATING	REMARKS
R20	4700Ω	
R21	680Ω	
R22	3300Ω	
R23	22Ω	
R24	100Ω	
R25	5600Ω	
R26	820Ω	
R27	Temp. Comp. 4.7Ω	#63-3663
R28		

\# Zenith Part Number.
Note 1. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		ZENITH PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	S-48114				
L2	Osc. Coil	95-1513				
L3	1st IF Trans.	95-1600				
L4	2nd IF Trans.	95-1601				
L5	3rd IF Trans.	95-1602				

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2	1	95-1587			TR-7		

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ZENITH PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	590Ω CT	3-4Ω	95-1588				TR-27		

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	49-908		

BATTERIES

ITEM No.	VOLTAGE	ZENITH PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	Z-7 *		1 *		635 *		M-14R *	* 6 Required

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		ZENITH PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N87G	103-19	1N60	1N295	1N295	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Tuning Cap. Earphone	22-3199 B39-24	2 Gang (15Ω Impedance @ 1000∿)

CABINETS & CABINET PARTS

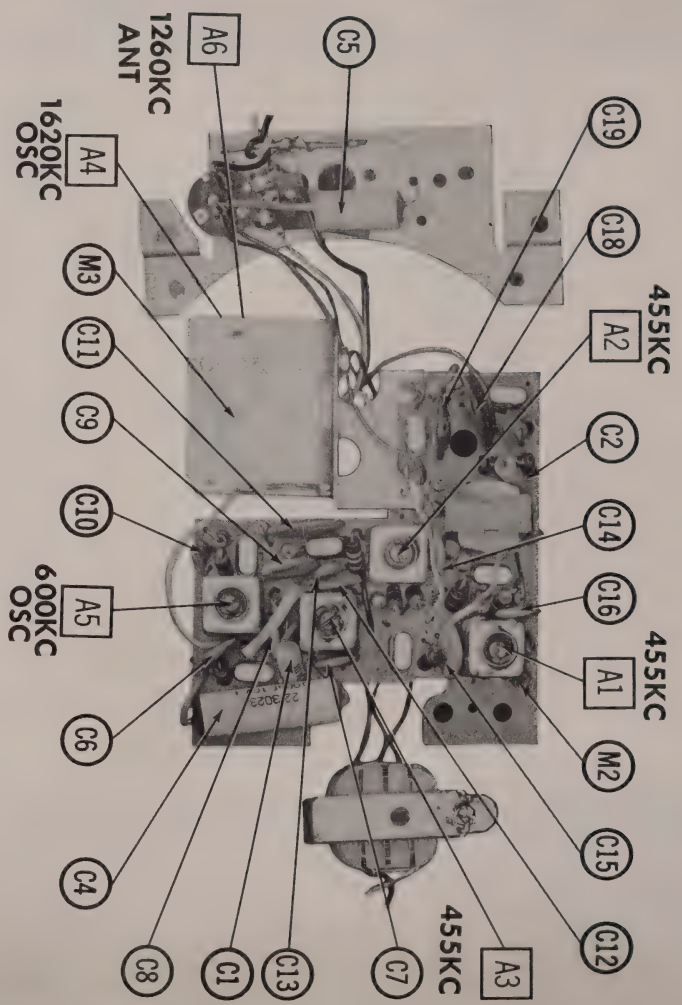
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

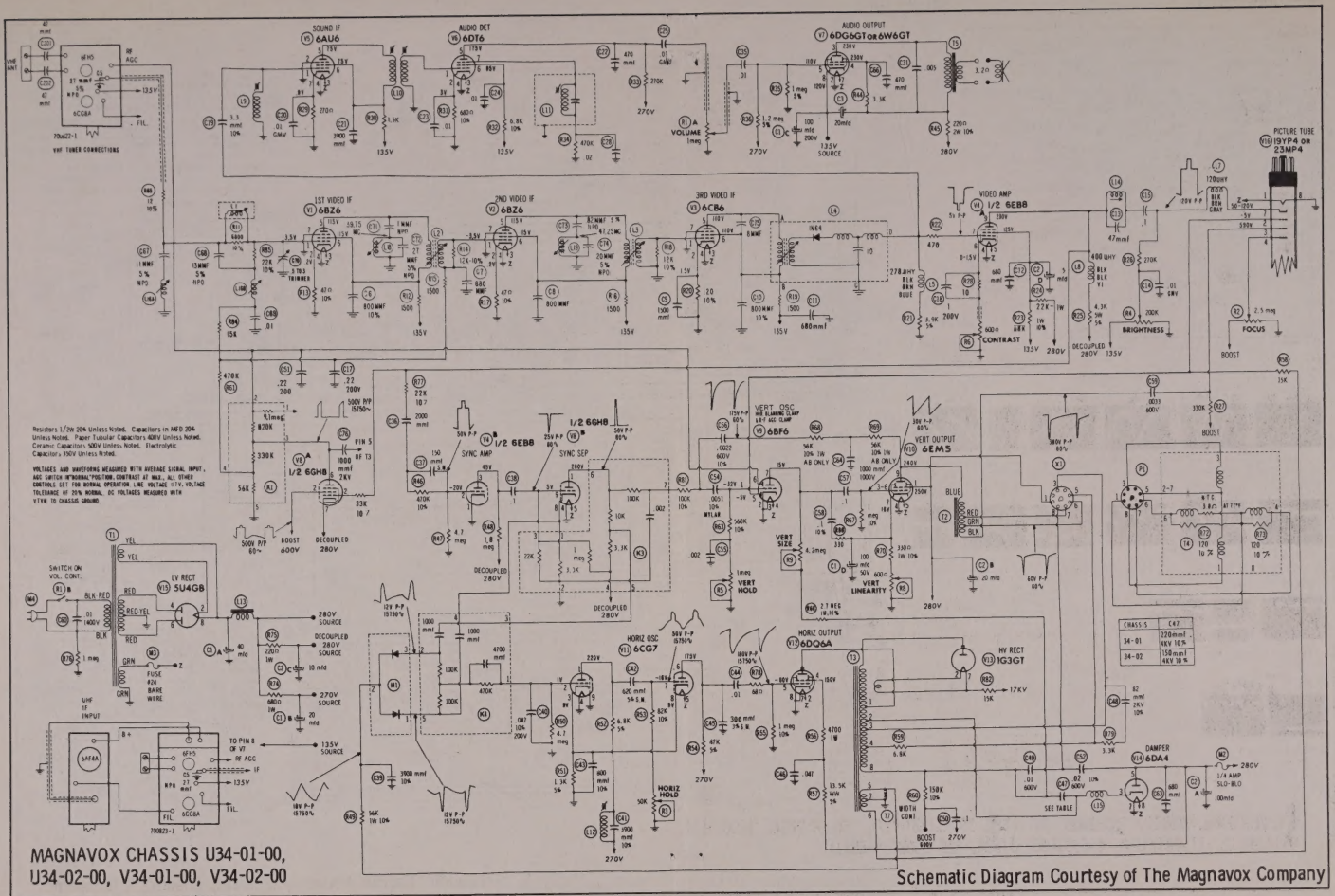
NAME	PART NO.	DESCRIPTION
Knob Knob Dial Scale Cabinet	S-47698 S-47647 S-47646 14-2848	Tuning Volume

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

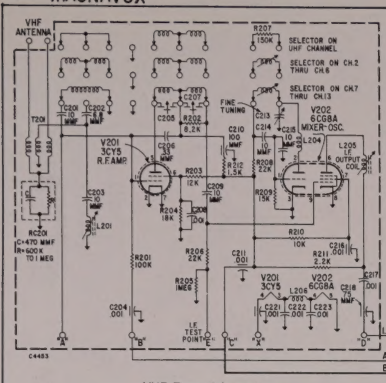
CHASSIS—TOP VIEW



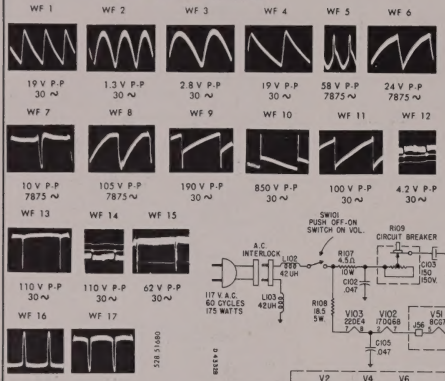

SOUND IF
6AU6
AUDIO DET
6DT6
AUDIO OUTPUT
6DQ6GT OR 6W6GT
PICTURE TUBE
19YP4 OR 23MP4
1ST VIDEO IF
6BZ6
2ND VIDEO IF
6BZ6
3RD VIDEO IF
6CB6
VIDEO AMP
1/2 6EB8
VOLUME
CONTRAST
BRIGHTNESS
FOCUS
BOOST
DECOUPLED 280V
DECOUPLED 135V
VHF TUNER CONNECTIONS
SYNC AMP
1/2 6EB8
SYNC SEP
1/2 6GH8
VERT. OSC
6BF6
VERT OUTPUT
6EM5
VERT SIZE
VERT LINEARITY
VERT HOLD
HORIZ OSC
6CG7
HORIZ OUTPUT
6DQ6A
HV RECT
1G3GT
DAMPER
6DA4
WIDTH CONT
HORIZ HOLD
LV RECT
5U4GB
SWITCH ON VOL. CONT.
UHF IF INPUT
TO PIN 8 OF VT
RF AGC
IF
280V SOURCE
270V SOURCE
135V SOURCE
DECOUPLED 280V SOURCE
BLUE
RED
GRN
BLK
CHASSIS
C47
34-01
220 mmf 4KV 10%
34-02
150 mmf 4KV 10%
MAGNAVOX CHASSIS U34-01-00, U34-02-00, V34-01-00, V34-02-00
Schematic Diagram Courtesy of The Magnavox Company

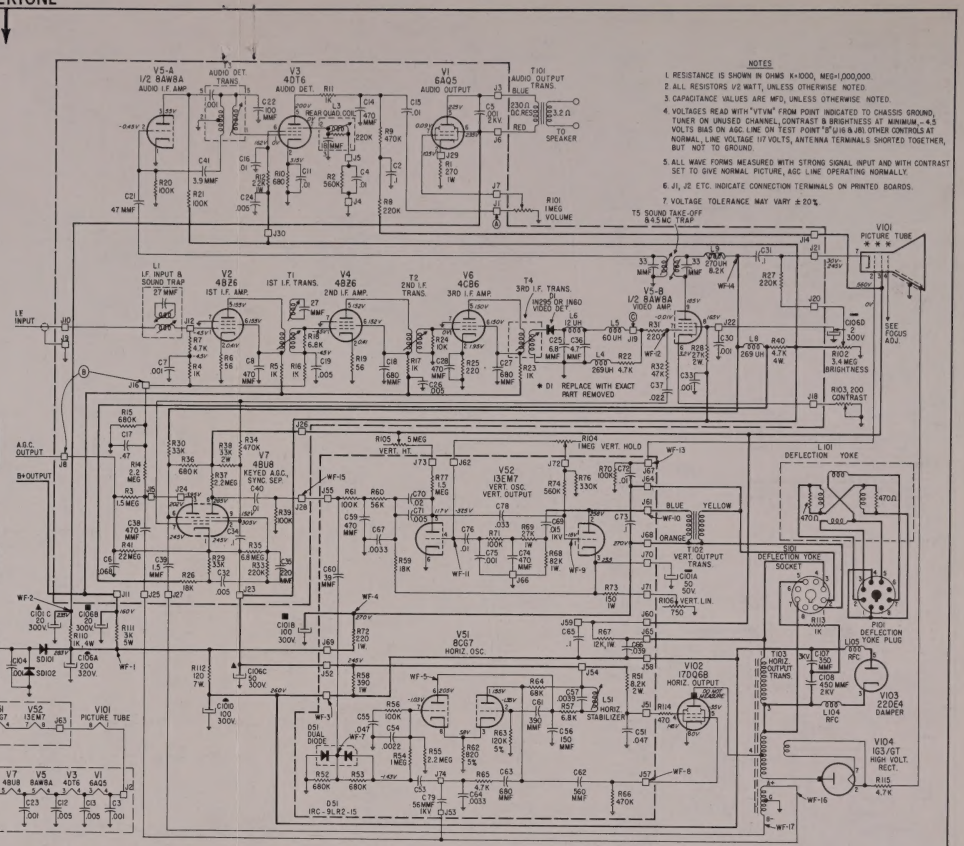
← MAGNAVOX

SILVERTONE



VHF Tuner Schematic




NOTES
1. RESISTANCE IS SHOWN IN OHMS K=1000, MEG=1,000,000.
2. ALL RESISTORS 1/2 WATT, UNLESS OTHERWISE NOTED.
3. CAPACITANCE VALUES ARE MFD, UNLESS OTHERWISE NOTED.
4. VOLTAGES READ WITH "VTVM" FROM POINT INDICATED TO CHASSIS GROUND, TUNER ON UNUSED CHANNEL, CONTRAST & BRIGHTNESS AT MINIMUM.--4.5 VOLTS BIAS ON AGC LINE ON TEST POINT "B" J16 & J81. OTHER CONTROLS AT NORMAL, LINE VOLTAGE 117 VOLTS, ANTENNA TERMINALS SHORTED TOGETHER, BUT NOT TO GROUND.
5. ALL WAVE FORMS MEASURED WITH STRONG SIGNAL INPUT AND WITH CONTRAST SET TO GIVE NORMAL PICTURE, AGC LINE OPERATING NORMALLY.
6. J1, J2 ETC. INDICATE CONNECTION TERMINALS ON PRINTED BOARDS.
7. VOLTAGE TOLERANCE MAY VARY ± 20%
VHF ANTENNA
V5-A 1/2 8AW8A AUDIO I.F. AMP.
AUDIO DET. TRANS.
V3 4DT6 AUDIO DET.
VI 6AQ5 AUDIO OUTPUT
T101 AUDIO OUTPUT TRANS.
TO SPEAKER
T5 SOUND TAKE-OFF 8.45 MC TRAP
V101 PICTURE TUBE
SEE FOCUS ADJ.
V2 4B26 IST I.F. AMP.
V4 4B26 2ND I.F. AMP.
V6 4CB6 3RD I.F. AMP.
V5-B 1/2 8AW8A VIDEO AMP.
T2 2ND I.F. TRANS.
T4 3RD I.F. TRANS.
L1 I.F. INPUT & SOUND TRAP
T1 IST I.F. TRANS.
V7 4BU8 KEYED A.G.C. SYNC SEP.
V52 13EM7 VERT. OSC. VERT. OUTPUT
V51 6CG7 HORIZ. OSC.
V102 17DQ6B HORIZ. OUTPUT
V103 220E4 DAMPER
V104 1G3/GT HIGH VOLT. RECT.
V201 3CY5 R.F.AMP
V202 6CG8A MIXER-OSC.
V201 3CY5
V202 6CG8A
L201
L205
L206
L207
L208
L209
L210
L211
L212
L213
L214
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L216
L217
L218
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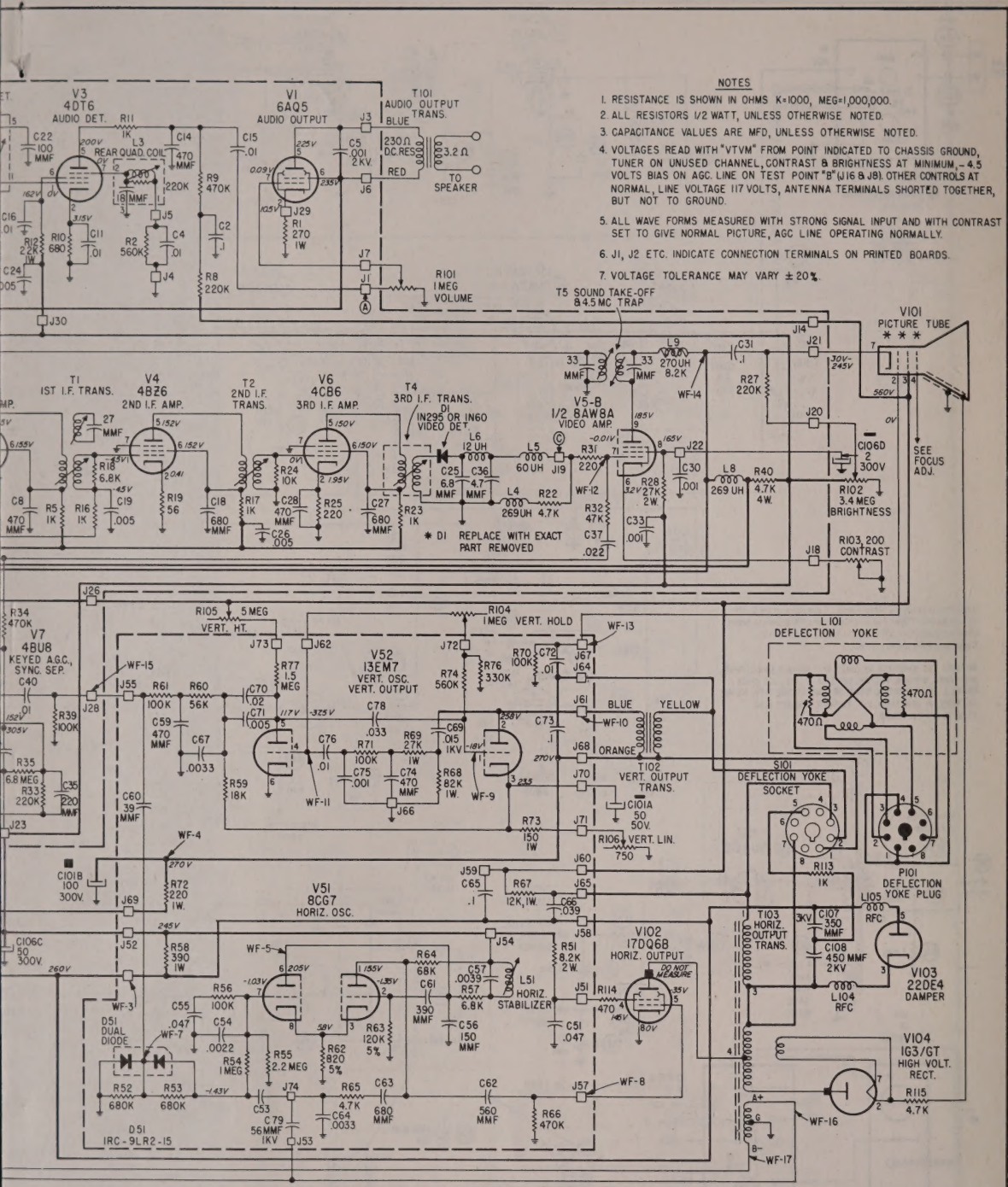
NOTES
1. RESISTANCE IS SHOWN IN OHMS K=1000, MEG=1,000,000.
2. ALL RESISTORS 1/2 WATT, UNLESS OTHERWISE NOTED.
3. CAPACITANCE VALUES ARE MFD, UNLESS OTHERWISE NOTED.
4. VOLTAGES READ WITH "VTVM" FROM POINT INDICATED TO CHASSIS GROUND, TUNER ON UNUSED CHANNEL, CONTRAST & BRIGHTNESS AT MINIMUM, - 4.5 VOLTS BIAS ON AGC. LINE ON TEST POINT "B" (J16 & J8). OTHER CONTROLS AT NORMAL, LINE VOLTAGE 117 VOLTS, ANTENNA TERMINALS SHORTED TOGETHER, BUT NOT TO GROUND.
5. ALL WAVE FORMS MEASURED WITH STRONG SIGNAL INPUT AND WITH CONTRAST SET TO GIVE NORMAL PICTURE, AGC LINE OPERATING NORMALLY.
6. J1, J2 ETC. INDICATE CONNECTION TERMINALS ON PRINTED BOARDS.
7. VOLTAGE TOLERANCE MAY VARY ± 20%.
V3 4DT6 AUDIO DET.
V1 6AQ5 AUDIO OUTPUT
T101 AUDIO OUTPUT TRANS.
TO SPEAKER
R101 1MEG VOLUME
T5 SOUND TAKE-OFF 4.5 MC TRAP
V101 PICTURE TUBE
SEE FOCUS ADJ.
R102 3.4 MEG BRIGHTNESS
R103, 200 CONTRAST
T1 1ST I.F. TRANS.
V4 4BZ6 2ND I.F. AMP.
T2 2ND I.F. TRANS.
V6 4CB6 3RD I.F. AMP.
T4 3RD I.F. TRANS.
D1 IN295 OR IN60 VIDEO DET.
V5-B 1/2 8AW8A VIDEO AMP.
* D1 REPLACE WITH EXACT PART REMOVED
V7 4BU8 KEYED A.G.C., SYNC. SEP.
R105 5 MEG VERT. HT.
R104 1MEG VERT. HOLD
V52 13EM7 VERT. OSC. VERT. OUTPUT
L101 DEFLECTION YOKE
S101 DEFLECTION YOKE SOCKET
P101 DEFLECTION YOKE PLUG
T102 VERT. OUTPUT TRANS.
R106 VERT. LIN. 750
V51 8CG7 HORIZ. OSC.
V102 17DQ6B HORIZ. OUTPUT
T103 HORIZ. OUTPUT TRANS.
L105 RFC
V103 22DE4 DAMPER
L104 RFC
V104 1G3/GT HIGH VOLT. RECT.
L51 HORIZ. STABILIZER
D51 DUAL DIODE
D51 IRC-9LR2-15
BLUE
YELLOW
ORANGE
WF-1
WF-2
WF-3
WF-4
WF-5
WF-6
WF-7
WF-8
WF-9
WF-10
WF-11
WF-12
WF-13
WF-14
WF-15
WF-16
WF-17

Schematic Diagram Courtesy of Sears, Roebuck & Company